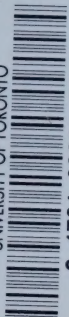


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contents

Problem of Facial Pain	1
Gingival and Periodontal Disease in Children — McIntosh	12
Histopathology of Enamel Caries — Mezl	17
Dentigerous Cyst—Simmons	24
N.R.C. Dental Research Report — Cook	27
Abstracts	29
Editorial	32
Book Reviews	34
The Association	35
The Library	36
Committees and Councils	37
Economic Security	38
The Corps	39
The Provinces	40
General News	44
In Memoriam	48
Announcements	50

sommaire

"Rapport d'un cas de lupus", par Marcel B. Archambault, B.A., D.D.S., Montréal.	51
Nouvelles de l'Association ..	54
PAGES EDITORIALES: "Plan d'assurance de l'A.D.C.", par Gérard de Montigny ..	57
Le facteur psychique en médecine dentaire	59
Aux Etats - Unis, violente polémique autour de la fluoruration de l'eau.	62
Nécrologie: Henri Lemieux, D.D.S.	64

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Journal

OF THE CANADIAN DENTAL ASSOCIATION

An approach to the problem of facial pain**

First report from Consultative Oral and Facial Pain Service*†, University of California, College of Dentistry

INTRODUCTION

THERE is an increasing recognition on the part of the dental profession of the widespread incidence of facial and oral pain of obscure nature and of the grave significance of such pain in terms of human welfare. It is becoming more and more obvious that the dentist, in order to adequately fulfil his commitment to the rendering of a true health service, must seek to greatly increase the efficacy of his service in this regard through a deepening understanding of the nature and characteristics of pain, somatic and psychosomatic, and of effective methods of diagnosis, therapy and prevention.

The need for clinical analysis, teaching and research in this field led to the establishment of the Consultative Oral and Facial Pain Service at the University of California, College of Dentistry. Within the Dental group

primarily concerned in this service the specialized functions represented are those of: anatomist; oral surgeon; diagnostician; pathologist; psychologist. Consultative services in other branches of Dentistry; in general neurology, internal medicine, otorhinolaryngology, etc., are available as required.

The following presentation is based on a selected group of cases handled within recent months. We have chosen one case to form, as it were, the central "plot" of this presentation. This case is discussed in considerable detail. It will illustrate the necessity, in complex conditions, not only for adequate preliminary study but for caution in diagnostic categorization and for repeated review and analysis during the period of treatment. Further, it will illustrate the principle that, in cases of obscure pain, it is often essential to combine diagnostic testing and actual therapy. Other cases are given brief reference, to demonstrate either variant responses in instances of some-

*Acknowledgement to H. Henry Welsengreen for the initial suggestion of this corporate project.

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what similar symptom complexes or problems of differential diagnosis, some of marked simplicity, others of more involved nature.

PRINCIPAL CASE HISTORY:

Miss P. S., an unmarried, retired schoolteacher, age 63 years, presented with a chief complaint of persistent pain of the left face focusing in a roughly triangular area—its base the upper edentulous ridge margin from the midline to the left cuspid area, its apex approximately at the ala of the nose.

This tense and deeply distressed patient offered the following past history in rather fragmentary form over several appointments:

Factors of assumed pertinence to our study date from 1929. In that year, because of a BMR of +20 and protrusion of the left eye, a portion of the thyroid gland was removed. Subsequently, a physician told her, or implied, that this operation had been unnecessary. She claimed no improvement after the operation; rather, she described cardiac symptoms and a prolonged period of taste sensation. Electric treatments, of undescribed nature, were given by an osteopath in 1932, without favorable outcome. A hysterectomy, including one ovary was performed in 1939 and an ovarian tumor was removed in 1941. No hormone therapy followed these operations. Her tonsils were removed in 1942 with subsequent improvement of her health; and she is convinced that her previous ill-health stemmed from the tonsillar condition. In 1945, a sister died of influenza (psychological connections between this event and subsequent history were suspected during history-taking). In 1944, Miss P. S. began to follow the Hauser dietary program ⁽¹⁾ which she has continued to date, although in recent years she has not followed it closely except in regard to yeast and cod-liver oil. She has taken multiple vitamin capsules for some time and "have had no colds for 3-4 years".

In January, 1948, she insisted upon the removal of the remaining upper five anterior teeth; and states that the dentist reported a chronic infection connected with the upper left incisor. Immediate denture service was given; but the denture was not comfortable. She used this or a remade denture until about the middle of 1949; but with only intermittent use due to discomfort from wearing it. The pain, at this time, was of a "pulling" nature. It persisted, and a physician consultant told her that he thought there had been a nerve injury. Her dentist, disagreeing, sent her to a neurologist. This was followed by a number of visits to medical men. One stated that it was not a tic; one saw no value in operating on the ground that the condition would not be relieved; another dismissed her with the remark "some stand it better than others"; one physician diagnosed the condition as a tic and gave an alcohol injection. This, she claimed, was extremely painful and the condition was made worse. Another physician informed her, bluntly, that it was "all in your mind". Her resentment at this statement had apparently never subsided and still colored her recital of this portion of the history.

The patient's last comprehensive medical examination, 1949, was non-contributory from the physical standpoint (occasional swelling of knuckles and ankles; normal reflexes; no food or drug allergies). The physician indicated his opinion that the oro-facial condition was psychosomatic in origin. About this time the lip condition developed. She noted a "twitching" of the left side of the upper lip. Several months later there was a hemorrhage of the left eye. This was accompanied by pain under the eye. Upon reference to a dentist, intro-oral films were taken with negative findings. The vitality tests of all remaining teeth were within physiological limits. Shortly after these events, she became acquainted with a method of "relaxation" of the eye. She

has apparently followed the prescribed ritual since that time.

In March, 1950, she consulted another dentist to whom she gave a confused picture, involving the lip twitching and ridge pain pattern described above. Further X-rays were taken and the findings essentially negative. However, in the anterior ridge on the left there was noted an area which remotely suggested the existence of a small portion of retained root. The area was opened up and explored without any fragments being observed; but the patient is convinced that a portion of root had previously been left in jaw; and to this she now attributes all of her difficulties. The dentist, reporting to us the above operation from his files, stated merely that exploration, with negative results, had been performed; whereas the patient, in describing the event, claimed that the doctor had said "never in his life had he seen such a serious condition". This dentist had made a left infra-orbital injection; but the patient could not tell him if the pain and "tugging" sensation was reduced thereby. Finally, the upper denture was remade in the hope of improving the condition. The dentist stated that during this period the patient consulted many physicians, a number of whom prescribed narcotics; and expressed his belief that she has taken an inordinate amount of codeine over the past two years. He had not been able to determine whether her problem was fundamentally organic or psychological.

The family history was non-contributory, apart from the psychological significance of the patient's reaction to her sister's death. Her mother died at 87 of pneumonia; her father at 66 of cancer of the rectum; her sister at 68 of influenza.

Clinical Examination:

Clinical examination revealed very little objective information, the significant aspects being subjective. The

patient's facies was that of an anxious and depressed individual. There was a twitch of the mouth and nose to the left side, irregular but persistent and seemingly related to the sensation of the pulling of a "loop" in the lip. At subsequent examinations the patient would vary the description of the pain, sometimes complaining of a more extended pattern from the left maxillary tuberosity to the symphysis. Description of her distress commonly involved the terms "cutting", "pulling", "tugging" and "the loop". The patient repeatedly expressed the conviction that if only the "loop", extending from the left ala of the nose toward the midline, would shift medially, the "pulling" sensation would diminish and she would be greatly improved.

At first, mere contact of an instrument with the ridge mucosa in the left central-cuspid area elicited a reaction of "intolerable pain".

As already indicated, the upper jaw was edentulous; the lower jaw was intact dentally with the exception of the third molars and of the right first molar. There were no temporomandibular joint symptoms. The patient reported that wearing of the upper denture somewhat lessened the pain.

Roentgenologic examination included routine intra-oral films, maxillary occlusal and antero-posterior head films. Intra-oral films, taken in 1949 and in 1950, were available for comparison. Moving picture records were taken of typical facial expressions.

In *Fig. 1* the patient's pain pattern is outlined.

General Comments on Findings in Histories and Examinations:

From the onset it was strongly suspected that psychogenic factors played a considerable part in the pain picture. It became important, therefore, as in a large percentage of cases of obscure facial and oral pain, to differentiate and to evaluate organic and psychogenic aspects of the problem.

University of California

Consultative Oral and Facial Pain Service

Name MISS P.S.

Date

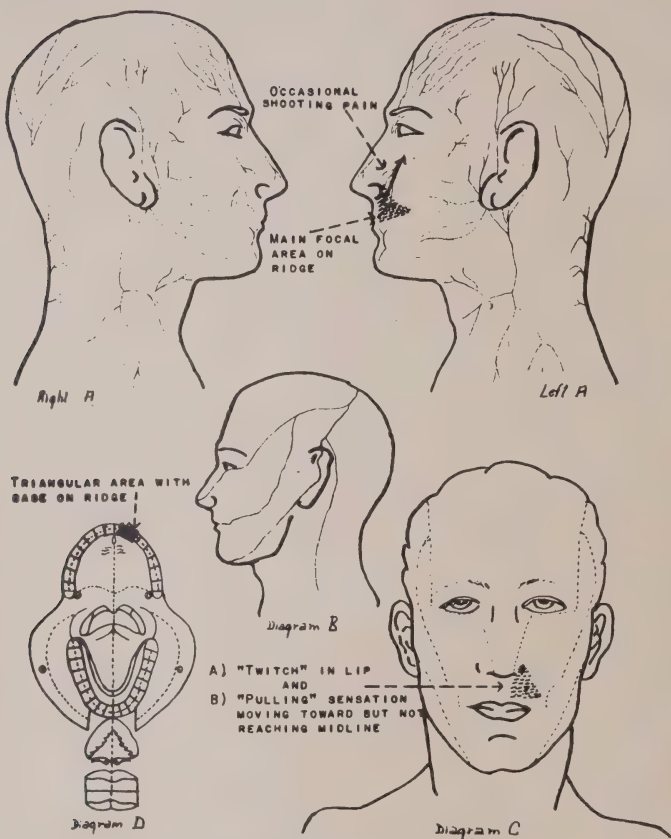


Figure 1

Desirable as it is to make such appraisal early in case handling the determination is often most difficult and even dangerous. Clinical knowledge is scanty not only regarding the etiology and diagnosis of obscure organic lesions but also regarding the role of psychosomatic influences in specific cases. It is all too easy to reach the frontiers of current understanding of the organic bases for facial pain and, consequently to ascribe a pain pattern to purely psychological origins. Such an error would only be matched by the converse approach in which only the organic status is brought into review. A judicious restraint is highly desirable, coupled with a search for comprehensive and reliable tools by which

efficiency can be enhanced. In our experience there are perhaps few cases in which obviously dominating psychogenic factors operate in the entire absence of some basal organic disturbance which serves as a "nucleus". On the other hand, there are few cases of long-standing and exhausting organic pain in which psychogenic factors have not developed, affecting the threshold of pain, its intensity and its significance to the individual.

Diagnostic-Therapeutic Approach:

Subsequent studies in the case of Miss P.S. were directed toward a multiple objective—a) the search for possible organic factors and for local functional

or other disturbances; b) the evaluation of psychogenic influences; c) the alleviation of pain; d) to establish greater stability in patient-dentist relations and to assist in the diagnostic process.

COMMON PERIPHERAL MECHANISMS responsible for oro-facial pain include⁽²⁾ : a) Distension or displacement of pain-sensitive vascular structures; b) Sustained contraction of skeletal muscles; c) Relative ischemia of various structures, for example in the region of the Gasserian ganglion or striated muscles; d) Unusually vigorous contraction of, or distension of, muscle, especially parts of the digestive and genitourinary tubes; e) Pulling, pinching or displacement of connective tissue structures, including periosteum and dura; and f) Inflammatory reaction . . . †

DIAGNOSTIC - THERAPEUTIC MEASURES useful in oro-facial pain are of several categories and comprise:

a) Regional block or infiltration with local anesthetic. These injections are widely used to interrupt afferent impulses. The usefulness of procaine injections in the differentiation of direct and referred pain patterns is obvious, since injection into superficial or deep regions to which pain has been referred does not reduce its intensity, whereas injection into the area, near or remote, which is responsible for the "referred" pain will result in its alleviation^{3,4,5}.

Moreover, since, in the areas of "referred" pain there seems to be a lowered threshold to ordinarily non-noxious stimuli, the local injection of procaine will eliminate hyperalgesia to secondary irritation, such as the frictional contact of clothing on an area of referred pain in the neck region. The use of placebo injections, for example normal saline, may aid in establishing the existence of significant psychogenic factors. Procaine in oil and "depot" injections may be used with caution, to provide prolonged action. It is a fortunate finding^{6,7} confirmed by many clinicians, that repeated injections of procaine will frequently lead to cessation of pain over periods far exceeding the recognized pharmacologic activity

of the anesthetic, even producing, in some instances, semi-permanent results.

b) Dietary and nutritional analysis and corrective measures^{8,9}.

c) Administration, on a test basis, of vaso-constrictor drugs, such as ergotamine tartrate (under usual precautions) to observe the effect of diminished pulsation of arterial vessels: of anti-spasmodic drugs, such as meperidine hydrochloride (Demerol) or atropine; of sedative drugs to relax muscles or increase local circulation; of analgesics to raise the threshold of perception of pain, etc.; of vitamin concentrates, especially members of the B complex group; to alter neurologic metabolism.

d) Physio-therapeutic measures.

e) Special intra-oral measures, for example the restoration of lost vertical dimension—on a permanent basis with prosthetic appliances or temporarily, on a test basis, with latex splints—in cases where the pain patterns involve the temporomandibular articulation and careful study suggests such "test therapy".

f) Alcohol injection.†

g) Neuro-surgery, such as the avulsion of the mandibular nerve.

h) In our work we have found that such techniques as the psychiatric interview, the Minnesota Multiphasic Personality Test and the Rorschach technique have enabled us to differentiate functional from organic pain components with a high degree of reliability. It seems likely, therefore, that further study along these lines may result in the evolution of simple and more specific tests which could be administered in the dental office. In view of the importance of this approach in the problems under discussion fuller reference will be made under the heading of psychological considerations.

In the case of Miss P.S., a number of the diagnostic-therapeutic approaches above listed were employed. Numerous procaine and xylocaine injections, regional blocks and infiltrations, were given. The results of these injections were, in some instances, distinctly favorable, in terms of pain alleviation

†This summary is not intended to be a comprehensive review of the mechanisms of pain, but merely to give a basis for the diagnostic-therapeutic measures used in the following paragraphs.

†This method is most commonly used at the present time to provide prolonged relief from pain without actual severance of the nerve. The similarity of its effects to nerve resection makes it a valuable preliminary adjunct to surgery.

and diagnostic usefulness; in some instances negative and confused. Demerol afforded relief during the period of its pharmacologic action but, of course, could not be indefinitely continued; ergotamine tartrate and other drug therapy did not afford consistently effective results. Dietary measures produced little change over the considerable period of observation. However, there was an unmistakable overall trend toward improvement in the status of the patient, punctuated by periods of striking advance and recession. Increasingly we were led to the conviction that we were dealing with a dominantly psychogenic disturbance.

Hyperkinesia in the area of the face and neighboring muscles is rather common but little is known of its causation, pathogenesis, or treatment. It would appear that psychic tension and voluntary movements of the face accentuate the tic. A useful clinical distinction can be made between facial tic and facial spasm. The tic, as stated above, is usually found in persons of psychogenic tendency; it is a co-ordinated repetitive, seemingly purposive and obsessive act which virtually becomes subconsciously automatic. This type of patient requires the services of an understanding psychiatrist or psychologist. Facial spasm is, usually, an organically precipitated contraction of a single muscle or of a group of muscles. The actual cause of the hemifacial spasm is unknown¹⁰.

The reaction to one step in the early diagnostic-therapy program was illuminating. Anesthetization of the painful area with procaine-in-oil resulted in a rather unfavourable local reaction, but nevertheless provided us with valuable information. As soon as the anesthetic had taken effect the patient acknowledged the remission of the pain in the area. The pain remained absent for several days, but the patient's complaints did not diminish. Instead they focussed on the "pulling, tugging" sensation. This technique is valuable prognostically in cases where neurectomy is contemplated, since it gives one an opportunity to observe the attitude of

the patient for several days, under sensory conditions almost identical with those which would result from surgery. This served to convince us, in this case, that the patient sorely needed some symptom about which to complain; and enabled us to eliminate alcohol injection or neurectomy from our treatment planning.

CONTRAST CASE

In contrast with the case of Miss P. S., in which accumulated evidence discounted the likelihood of organic disturbance is the following case: Mrs H., age 59, originally complained of puffiness of the face regarding which she had consulted a physician and a dentist. The physician "on chance" recommended extraction of the upper right third molar. According to the patient there was considerable trauma during the surgical treatment with a period of difficult healing. Later, she experienced continuous diffuse, aching pain over upper and lower teeth on both right and left sides. This condition sometimes prevented the patient from going to sleep readily, due more to nervousness than to pain. She complained of increased intensity on clenching the teeth. Clinical examination revealed marked overstress, in right lateral incisor and molar area due to loss, without replacement, of the lower cuspid, and the first and second bicuspid. Traumatic movement of teeth in function was obvious. There was marked general attrition. All teeth excepting one bicuspid were very hypersensitive, many giving painful response at the lowest scale reading on the vitalometer. The patient had become conditioned to avoid both hot and cold foods, since the onset of the face-pain trouble.

Treatment: On subsequent visits the patient was treated with several xylocaine injections of upper and lower jaws alternating between sides. These gave relief in the injected quadrant only during the period of action of the anesthetic. The above experience, coupled with the clinical presence of advanced attrition and abrasion and the subjective symptoms of hypersensitive teeth, suggested the use of some local desensitising treatment. Gottlieb's zinc chloride-potassium-ferro-cyanide-silver nitrate impregnation technic was employed. After several applications to all of the teeth the patient reported freedom from pain and discomfort.

Patient was advised that subsequent re-applications might be needed. After an interval of complete freedom, slight distress occasioned a second impregnation. Several months later the patient reported continued absence of all distress.

Diagnosis. Hypersensitive dentin due to rapid advance of attrition and abrasion which had outstripped the normal pulpal protective mechanism. Relation of secondary complaint to original complaint probably coincidental.

CONTRAST CASES—2 AND 3

The Temporo-mandibular joint, although seemingly not involved in the case of Miss P. S. frequently plays an etiologic rôle in facial and oral pain.[†] The following two cases illustrate the pain problem in a) episodal injury to the joint; b) bruxism, affecting both teeth and maxillo-mandibular relations and coupled with steep incisal and cuspal interference.

Case A—Mrs L. F., in a humorous social situation, opened her mouth widely and bit down upon a whole carrot. Marked pain immediately ensued. Four months later she presented with the complaint of a persistent, deep, "shooting" pain focused in the left mandibular molar region and radiating to eye and ear regions on that side. She stated that little diminution of the pain had occurred since the original episode, although a "popping" sensation, which she located toward the angle of the mandible, had almost disappeared. Examination added nothing of significance to the history of the "carrot episode." It was obvious, however, that psychic factors entered also into the picture. The patient was in the menopause, with some of the frequently associated symptoms. She had been apprehensive of malignancy with regard to the facial pain pattern.

The patient was informed of the etiology of the case, reassured as to her fears and instructed in the importance of strict limitation of mouth-opening. The possibility of intermaxillary wiring for stabilization was discussed. (On a subsequent visit the evidences of neurotic behavior were clearly demonstrated; and this was frankly discussed with her.) A week later she telephoned to report that, on the day following her last appoint-

ment, the pain had completely disappeared. She referred gratefully to what she called the "pep talk," and promised meticulous care in restriction of jaw motion. We anticipate complete recovery in this case; and attribute the prolonged healing period, in part, to inadequately limited jaw movements and in part to the psychological effects of her own evaluation of, and reaction to, the situation.

Case B—Mrs C., 42, a rather tense business woman with exacting supervisory duties, was referred with the complaint of severe, intermittent pain affecting the left mandible and occasionally extending to the left maxilla. In her physical background were a so-called "nervous breakdown" (ten years previously), followed by a hysterectomy; also an allergy to various food-stuffs. Her dental history included an average amount of restorative treatment and the removal, seven years previously, of the four third molars one of which, the lower left, presented complications requiring transfer of the case, in midoperation, to an oral surgeon. This incident had greatly upset the patient psychically and she persisted in the belief that a part of her jaw had been removed. Mandibular pain, similar to toothache, had first been noted two years previously, referable to the left third molar area and varying in duration and periodicity, with occasional involvement of the left maxilla. The most disturbing aspect of the pain pattern was the tendency to awaken at night, preventing further sleep unless drugs were used. The patient had been conscious of a temporomandibular "clicking" without pain symptoms; but was unaware of any habit of bruxism. Head position in sleeping was unrelated. Oral examination revealed a disturbed occlusal pattern with marked lateral and incisal interference, and restricting function to an "up and down" masticatory stroke. Marked stresses accompanied attempts at lateral movement, especially in the left first molar region. There was subluxation of the left temporomandibular joint with slight deviation to and limitation of motion on, the left. The pattern of occlusal wear suggested the possibility of bruxism exerted particularly on the left side. This suspicion was strengthened by obvious signs of psychic tension. Intra-oral and temporomandibular joint X-rays were non-contributory.

Preliminary treatment consisted of gross adjustment of occlusal interfer-

[†]A commonly recognized involvement of the T. M. J. in pain patterns is that in which the vertical dimension of the jaws is altered with consequent malposition and malfunction of the condyle and adnexae.

ence to excursive movement, discussion of the possibility and of the significance of bruxism, and the construction of a latex splint as a protective and diagnostic aid in the event of an actual grinding and clenching habit (to be worn over the lower teeth at night and at other times as feasible). In four days the patient reported a degree of relief; and she herself confirmed the suspicion of bruxism. In approximately one month she was entirely free of pain at night, and was conscious only of intermittent residual discomfort during the day. It is probable that full relief will follow the elimination of bruxism and the completion of occlusal equilibration.

Early in the course of our contact with Miss P. S. we became suspicious of the reliability of reported symptoms and this suspicion grew as we became better acquainted with the patient and her case. The description which she offered at the very outset alerted us to the possibility of psychological factors. No physiological or anatomical basis could be postulated which would account in a satisfactory way for her sensation of a "cord" running from the supra-orbital region down along the side of the nose and forming a loop in the maxillary ridge. This "cord" and its terminal loop were referred to again and again by the patient in an almost obsessive way and she became convinced toward the end of our contact with her that the "loop" was moving toward the midline. She felt that if only this "loop" could be enticed across the midline, it would "break up" and her discomfort would cease. Her reports of the pain pattern, history, etc., were often confused and contradictory, but her description of the "pulling, tugging sensation" related to this "cord" remained constant and consistent throughout our contact with her.

Her history of medical and dental treatment was a most impressive one. As nearly as could be determined she had sought the advice and services of 25 to 30 dentists and physicians. She had undergone several surgical oper-

ations and various other forms of somatic therapy such as the "electric treatments" administered in 1932 by an osteopath. This aspect of her history is suggestive of the phenomenon described by Menninger⁽¹¹⁾ as "poly-surgical addiction"—a neurotic insistence upon unnecessary surgical treatment. This type of behavior was found to be consistently accompanied by strong guilt feelings and was highly indicative of a neurotic personality structure. Closely akin to this was the fanatic dedication to a ritual of eye exercises. She talked about these exercises with conviction and suggested to us that we could really discard our glasses if we would adopt her relaxation exercises. Her description of these exercises was highly interesting and the bizarre nature of her comments approached delusional quality at times. She talked about attempting to see a "perfect I" and went on to say that any tension made this impossible, and therefore anyone who could see a perfect I had attained a state of complete relaxation. She described, with facial contortions and gestures, the subjective experience of attempting to "get inside" a printed "e" and all this was said with the greatest sincerity.

With this growing attention to her deviant psychological characteristics, we began to look more closely at all of her behavior. Many aspects of her history as well as her clinically observable behavior and symptomatology began to fit into a consistent pattern. She was a retired schoolteacher, a spinster of 63 years. She had been closely attached to her mother, whose maternal role seemed to have been taken over, in part, by the sister who died of influenza in 1945. Her general behavior was not extremely inappropriate but would certainly justify the term eccentric. Her concern with her body—diet, eye exercises, polysurgery, etc. — when viewed against the background of the

total picture which seemed to be developing, suggested a serious neurotic structure. It was decided to investigate this possibility more thoroughly and to this end a Minnesota Multiphasic

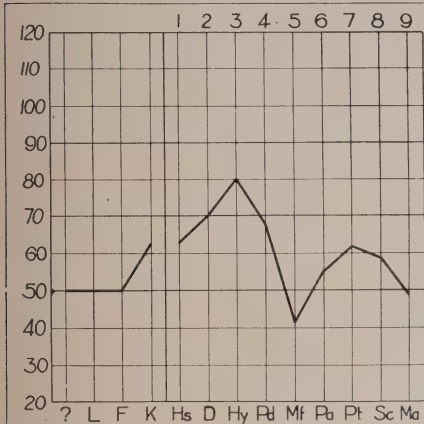


Figure 2

Personality Inventory and a Rorschach Test were administered with an unstructured psychiatric interview.

The results of these tests confirmed our suspicions that we might be dealing with a psychogenic pain. The MMPI profile (Fig. II) is a classical picture of a severe hysterical psychoneurotic. It suggests a person whose emotional tensions and conflicts are discharged through the mechanisms of body concern or physical symptoms rather than being directly expressed as anxiety or depression. Women with similar personality profiles typically express their hostility toward others by inviting aggression and then using this to provoke feelings of guilt in the aggressor. The tests indicated a somewhat distrustful person who seemed to be exerting herself to appear in as good a light as possible.

Fig. III shows this patient's MMPI profile superimposed upon the mean profile of eight randomly selected cases of psychogenic oral or facial pain in women who were subsequent patients in our pain service. The simi-

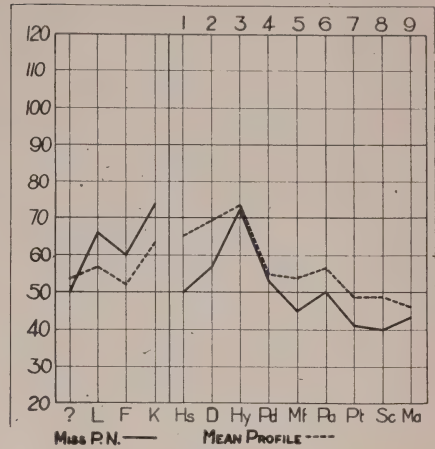


Figure 3

larity of the profiles is striking and suggests that we may be dealing not only with somatic syndrome in many cases of oral and facial pain, but with a psychological syndrome as well.

The patient's performance on the Rorschach Technique was quite consistent with the MMPI results and additionally confirmatory of our suspicions of a psychoneurotic basis for the pain picture. The record showed a very defensive person with a marked lack of emotional maturity. She has many impulses and feelings which she cannot accept and for which she can find no safe and satisfying means of expression. The content of her responses indicates considerable difficulty in handling sexual feelings as well as a great fear of emotions in general and masculine figures in particular. Her behavior during the test showed her primary defense technique to be the disowning of responsibilities and an attempting to shift the burden to the shoulders of an outside figure. When this proved inadequate she took refuge in very immature and typically hysterical behavior, and as this too proved inadequate, she displayed certain schizophrenic-like characteristics. This seems to indicate the direction in which the patient would move, should

she become more severely disturbed.

We now had strong confirmation for our initial hypothesis and considered the use of hypnosis as a diagnostic aid. This technique is usually very effective in the manipulation of hysterical symptoms and the hypnotic state is ordinarily more easily induced in hysterical cases than in many other types of patients. Hypnosis was attempted but it was not possible to obtain sufficient depth to make any definite tests. This was probably due to the element of suspicion running through the patient's behavior as well as her deep fear of men and her inability to relax with them. While hypnosis did not prove to be a usable tool in this case, we have found it to be of inestimable value in the diagnosis of other cases in the pain service.

CONTRAST CASE—4

The case of Mrs. R. L., age 31, illustrates one of the ways in which hypnosis can be a very useful clinical tool. She complained of a painful mass in the sublingual region of her neck. Clinically there was a hard, swollen area roughly 5 cm. in diameter in the midline of her neck beginning just below the inferior border of the mandible. Any pressure on this area elicited emphatic reports of pain from the patient. As the history was being taken it was noticed that the patient was unusually tense. The lateral muscles in her neck were contracting spasmodically, and her voice was hoarse and quavering. She told of her father's death, one year before, from laryngeal carcinoma, and her subsequent fear of cancer. The swelling had been diagnosed by one dental surgeon and one otolaryngologist as a tumor and a biopsy had been suggested. On palpation the swollen area felt much like a muscle in a state of spastic contraction. The patient was easily hypnotized and was told that when the operator rubbed his finger gently over the swollen area the muscle in her neck would relax and the swelling and pain would disappear. When this was done the swelling completely vanished in a period of not more than fifteen seconds and when the patient was awakened she reported complete freedom from the pain. This patient was treated

psychotherapeutically by one of the authors and a detailed report of the psychodynamics of the case will appear in a later publication. At this point this case serves to illustrate the use of hypnosis to rule out the possibility of a neoplasm without having to resort to biopsy. It should be noted, however, that had the swelling not disappeared no conclusions could have been drawn one way or the other.

At a conference of our staff it was decided that the pain in Miss P. S.'s case was probably due in large part to emotional factors. It was felt, however, that the patient's age as well as her personality structure made for a poor prognosis as far as a direct attack on her emotional problems was concerned. In younger and more pliable people competently conducted psychotherapy may produce excellent results in cases of this kind. It was decided that we should continue the somatic treatment already underway, all the while taking advantage of every opportunity to make the patient feel that we were interested in her welfare. This treatment seemed to lead to a relatively complete remission of the symptoms. We went along with her in her ideas about the "loop" breaking up. We realize that this was serving to reinforce her delusional system, but it was felt that little could be done to help her attain a better general adjustment and that much better results could be had with regard to her physical complaint if we made use of her psychopathology rather than attempting to oppose its influence.

DISCUSSION AND SUMMARY OF THE CASE

In recapitulation, the members of the pain clinic staff feel that it is not possible to specifically allocate the agents responsible for the patient's improvement, or to assay the comparative importance of each one. The frequent relief from pain following multiple procaine injections is in harmony with current neurological findings. Drug therapy offered palliative

relief but did not clarify the etiology; and of course, an indefinitely prolonged drug regimen was highly undesirable. The systematic exclusion of local or systemic organic or functional factors, the varying responses to procaine injections and medication, the psychological evaluation and the overall behavior of the patient over the entire course of treatment would seem to underline the psychological aspects of the case. While specific psychological treatment was not given (in view of the indications that she would probably be non-cooperative) yet the entire treatment program might be said to follow a carefully prepared plan from the psychological standpoint. It was realized that pain, whether of organic or psychogenic origin, is "pain"; and it must be treated with due regard.

The patient's symptoms were never underestimated or disparaged, in her presence. A very sincere rapport was built between the patient and each staff member concerned in her case. This, we believe, was an absolute essential. We feel that earlier consultants had probably seriously complicated the problem by their comments to the patient concerning the "unreal" characteristics of her ailment.

When such improvement had been noted as to warrant return of the patient to her home in a distant state, she was herself permitted, for psychological reasons, to fix the date for cessation of treatment. She was referred to a carefully chosen dentist in her home city for supervision.*

CONCLUSIONS

1) The study of obscure oral and facial pain, its analysis, diagnosis, prognosis, and therapy is not only a legitimate field of activity in the practice of Dentistry, but constitutes a responsibility which the profession cannot ignore or relegate entirely to other allied health fields. It constitutes an area in which the interest of the den-

tist, the physician, the psychiatrist, and the psychologist are mutual and complementary. It does not presuppose the assumption, by the dentist, of authority or concern beyond the bounds of modern concepts of dental education and practice.

2) Effective performance within this field on the part of the dentist demands a broad approach, comprehensiveness and meticulous detail in examination, case history-taking, and the orderly, step-by-step eliminative process of differential diagnosis. This must be based upon a reasonable familiarity with those aspects of local-systemic interrelationships, of neuro-anatomy-physiology and pathology and of psychogenic disturbance pertinent to the direction of, and participation in, pain case-management.

3) An approach to the philosophy and practical study of facial and oral pain is presented through the discussion of case histories, one of which is delineated in detail, the others in outline. Limitations of space preclude the inclusion of many other types of pain problems encountered.

4) Awareness of the possibility of existence of both psychological and organic factors make it imperative that each of these potential factors be given appropriate emphasis in case-management. Experimentation with diagnostic psychological tools, such as personality inventories and other tests may lead to the development of practical aids in dentistry for the determination of disturbed states and of the necessity, or otherwise, for specialized consultations.

5) Under the conditions indicated above the general practitioner of dentistry who includes within his purview the study and treatment of obscure oral and facial pain may, notwithstanding the limitations of current knowledge in this field, reasonably anticipate a substantial degree of successful achievement, if not in the complete restoration of physiologic condi-

tions at least in the alleviation of suffering and the restoration of function.

6) An understanding and humanitarian attitude is indispensable in the successful handling of pain problems. The reality of pain as a subjective phenomenon, whether of organic or psychogenic origin, must be recognized and optimal rapport between patient and diagnostician established and maintained.

*As this article goes to press a report has been received from the dentist in her home city to whom Miss P. S. had been referred. This very competent report, covering a period of over one year, confirms both the original analysis of the case and the guarded optimism as to its prognosis expressed above.

REFERENCES

1. Hauser, G.: Look Younger, Farrar, Straus and Young, New York, N.Y., 1951.
2. Wolff, H. G. and Wolf, S.: Pain — Chas. C. Thomas Co., 1st Ed., Revised, Nov., 1951, p. 66.
3. Wolff, H. G., and Wolf, S.: Pain — Chas. C. Thomas Co., 1st Ed., revised, Nov., 1951, p. 31.
4. Lewis, Thos.: Pain — Macmillan Co., 1942, Chapter XV.
5. Langley, L. L. and Cheraskin, E.: Physiologic Foundation of Dental Practice, C. V. Mosby Co., 1951, p. 125.
6. Wolff, H. G. and Wolf, S.: Pain — Chas. C. Thomas Co., 1st. Ed. revised, Nov., 1951, p. 68 and p. 31.
7. Livingston, W. K.: Pain Mechanisms—Macmillan Co., New York, N.Y., 1943, pp. 112-3.
8. Jolliffe, N., Tisdall, F. F., Cannon, P. R.: Clinical Nutrition, Hoeber Co., 1950, pp. 3 and 179.
9. Simmonds, Nina.: When is a Skeleton Nutritionally Retrievable?, J. of Prosthetic Dentistry, Nov. 1952, pp. 746-755.
10. DeJong, R. N.: The Neurologic Examination, Paul Hoeber Co., p. 513, et. seq.
11. Menninger, K.A.: Polysurgery and Polysurgical Addiction: Psychoanal. Quarterly, 3:173, April, 1934.

Gingival and periodontal disease in children*

by W. G. McINTOSH, D.D.S., F.A.C.D., Toronto

THIS paper discusses the above subject from three aspects:

1. How frequently do periodontal lesions occur in children of 6 to 11 years?
2. Will the patient 'grow-out' of periodontal lesions that are present at an early age?
3. How do the periodontal lesions of children compare microscopically with those in adults?

Clinical and microscopic evidence which help to answer these questions are presented.

The literature is full of controversial statements regarding the onset of periodontal disease. For example McCall¹ has written that the foundation of most periodontoclasia of adult life is laid in childhood. He points out that gingivitis is very common in children and considers it a phase in the development of periodontitis. Bunting² and also Broderick³ and Bruker⁴ reported that periodontal disease is seldom seen in childhood or youth—but it is confined almost always to persons over 25 to 35 years of age. Schour and Massler⁵ reported that 40.2% of children in Italy showed

signs of gingival disease. The same authors⁶ concluded their report on the incidence of gingivitis in Chicago school children by saying that "attached gingivitis (periodontitis) was practically non existent in their group of children".

Methods

Three hundred and ninety-eight children between the ages of 6 and 11 years were the subjects in a clinical study. They were all residents of a low-income section of Toronto. They were taking part in a Red Cross School Meal Study and had been selected as pairs for equivalent weight and height etc., as reported elsewhere⁷. A full mouth examination for the presence of gingival sulci or pockets was made on these subjects using a William's calibrated periodontal probe. All pockets 3 millimeters or more in depth were recorded. The examinations were done by two examiners who saw different subjects and the results were totalled.

The microscopic material was procured from another source during routine autopsy examinations. The tissues secured were fixed in formalin decalcified with five percent nitric acid, block-

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ed in celloidin and stained with haematoxylin and eosin stain.

Results

The number of children in each group was as follows:

6 years	25
7 years	83
8 years	79
9 years	84
10 years	88
11 years	39
Total	398

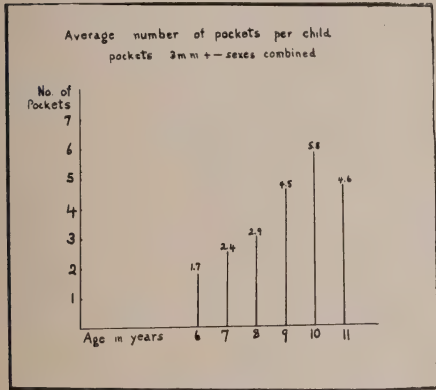


Chart 1

Chart 1 shows the average number of pockets (3 mm or more in depth) per child. The average D.M.F. for the same 9, 10 and 11 year old children was 5.5. Hence there appears to be nearly as many early periodontal

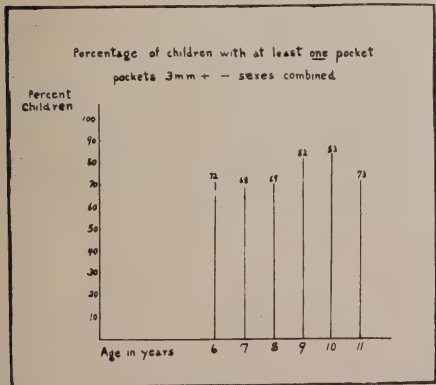


Chart 2

Gingival and periodontal disease in children

lesions as caries lesions in the same group of children.

Chart 2 shows the percentage of children in each age group who had at least one pocket. The average for all age groups is 74.5%.

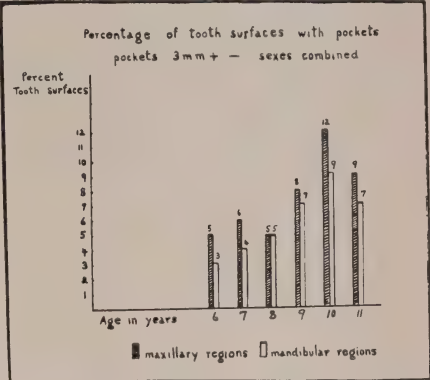


Chart 3

If each tooth is considered to have four vertical surfaces it is possible to calculate the percentage of all surfaces with pockets in the maxilla and mandible. The results of these calculations for each age group are shown in Chart

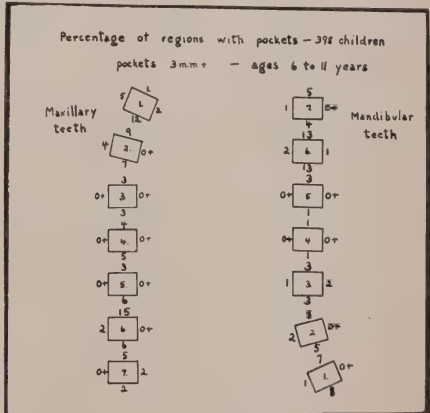


Chart 4

3. With the exception of the eight-year-old children, all age groups had a slightly higher incidence of affected surfaces around the maxillary teeth than around the teeth in the mandible.

Chart 4 shows in percentages the number of times each tooth surface was found to have a pocket when all age groups are combined. Both sides of the mouth are included in these figures. For example, the distal surface of the upper central was found to have a pocket 12 times in every hundred distal surface (right and left side) examinations. The numbers inside the squares indicate the tooth position in the arch. Numbers 4 and 5 represent either the deciduous molars or the first and second bicuspid depending on which teeth were in position at the time of examination. The greatest pocket frequency occurred at the mesial of the first molars around both upper and lower teeth.

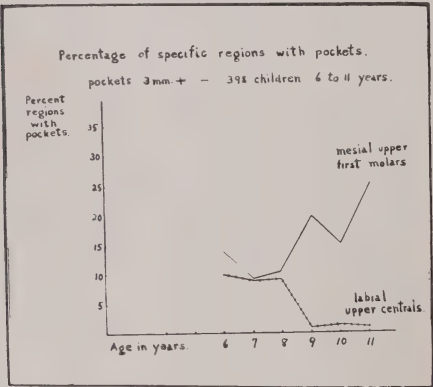


Chart 5

In chart 5 the pocket frequency for a specific location is plotted at each level from 6 to 11 years. Two locations are used as illustrations. At age 6, approximately 15% of all upper first molars had pockets on the mesial surface. At age 11, approximately 25% of the mesial surfaces of upper first molars had pockets. At the labial surface of upper centrals, on the other hand, at 6 years of age about 10% had pockets. In the 11-year-old children the incidence at the labial of upper centrals was nearly zero.

Figure 1 is a photomicrograph of a section which was taken four hours



Figure 1

after death, from a six-year-old girl who died from a brain tumor. The photograph shows the ribbon-like remnants of the enamel cuticle with clusters of organisms attached (a). Point (b) represents the base of the gingival sulcus which is filled with organisms, desquamated cells and debris (c). The epithelium approximating the tooth is

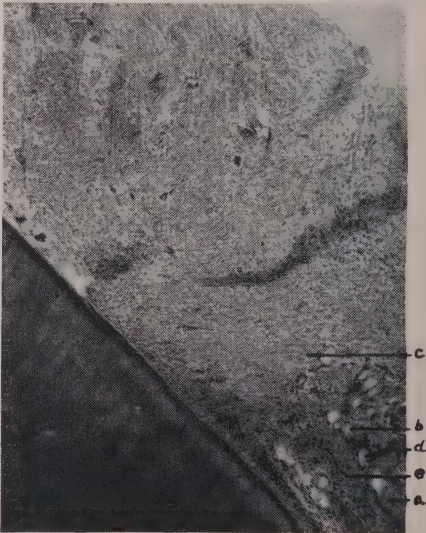


Figure 2

poorly stained and undergoing various stages of necrosis (d). The deeper epithelium has proliferated along the surface of the cementum (e). Inflammatory cells (f) appear in the area and are concentrated in the epithelium

and connective tissue immediately apical to the base of the sulcus.

Figure 2 is taken from a section procured from a six weeks old baby girl, three and a half hours after death by asphyxia. It shows one side of a tooth on which there was a sulcus similar to that shown in figure 1. The base of the sulcus is above the border of this photograph. This picture is inclined to show the lesion in the vicinity of the bone crest (a) characterized by haemorrhage

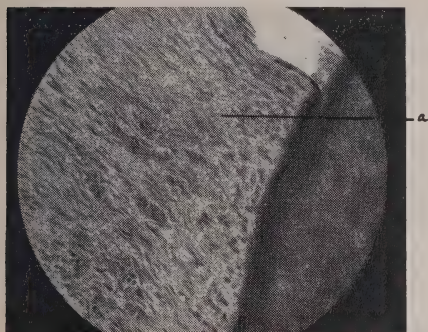


Figure 3

and vacuole formation (b), destruction of principal fibres (c) and loss of bone (d). Some infiltration of inflammatory cells can also be seen (e). Using serial sections this lesion was shown to be continuous with gingival sulcus.



Figure 4

On the opposite side of the tooth shown in Figure 2 there was no gingival sulcus and the underlying tissues appeared healthy (figure 3).

Figure 4 is a low power magnifica-

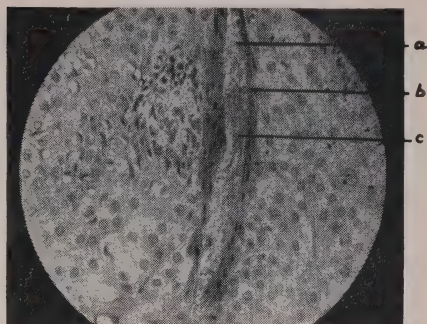


Figure 5

tion of a gingival cleft (a) from the same six weeks old baby girl. The proliferation of the epithelium (b) into the underlying connective tissue can be clearly seen.

Figure 5 is a higher magnification of the area immediately below the open space (cleft) seen in figure 4. It shows a tract (a), lined by epithelial cells (b) that have undergone some degree of keratinization, and filled with desquamated cells, organisms and cellular debris (c). No inflammatory cells were seen.

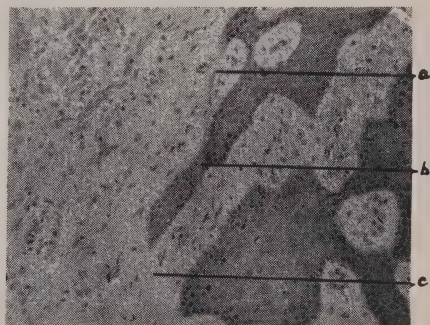


Figure 6

Figure 6 is from the area below that illustrated in figure 5. The lateral dimension of the tract (a) is considerably reduced but it can be clearly seen penetrating into the deeper tissues and even cutting across an epithelial finger (b). The connective tissue fibres in the area immediately adjacent to the tract are indistinct. Few fibroblasts were seen in

this area and again there was little evidence of cellular infiltration.

DISCUSSION

While it is possible that some pockets were missed during the clinical examinations, these pockets that were recorded constituted an objective measurement about which there could be little doubt. No distinction was made between those pockets that were produced by loss of attachment between the soft tissues and the tooth and those that were produced by gingival enlargement (inflammation). However, any pocket that is three millimeters or more in depth provides a sheltered incubation zone in which debris, organisms and toxins can collect and from which destructive agents may attack the deeper tissues as was suggested in the microscopic sections. It seems very probable that these shallow pockets, regardless of type, may constitute an early stage of a more advanced periodontal lesion.

Massler and Schour found in their survey of gingivitis in suburban Chicago school children that 80% of all gingivitis was exhibited around the anterior teeth. The figures in chart 4 suggest that such is not the case for the distribution of pockets.

The gradual increase in pocket frequency around the mesial surfaces of upper first molars, shown in chart 5, might be interpreted to indicate that pockets once formed in this area tend to persist and that new pockets continue to develop in this location in the older age groups. For the subjects participating in this study the pockets on the labial of upper centrals followed an opposite pattern. It therefore seems that some areas are more important than others from a treatment standpoint, not only because of a higher incidence of pockets, but also because in some locations the pockets appear to persist while in other areas they may decrease without treatment.

The method of clinical examination

used in this study appears to be a practical one for obtaining evidence on the incidence and behaviour of periodontal lesions. Other age groups should be included in further examinations.

The two types of periodontal lesion illustrated in the photomicrographs are typical of the inflammatory and necrotic lesions of adults described by Box^{8,9,10,11}. They are shown here to provide evidence that similar periodontal lesions may develop at an early age.

SUMMARY AND CONCLUSIONS

1. Using clinical and microscopic evidence periodontal pockets were shown to occur in children 6 to 11 years of age.
2. A method of assessing the incidence of periodontal diseases by recording incidence and depth of periodontal pockets has been suggested. The method appears to be useful in providing data about the inception and incidence of periodontal disease.

ACKNOWLEDGEMENTS

A number of individuals have helped and guided me in the course of this study. I am indebted—

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BIBLIOGRAPHY

1. McCall, J. O. Gingival and Periodontal disease in children. *J. Period.* Jan. 1938, P. 7.
2. Bunting, R. J. A textbook of oral pathology for students and practitioners of dentistry. Lea and Febiger, Phila. 1940.
3. Broderick, F. W. The principles of dental medicine. C. V. Mosby, 1943.
4. Brucker, M. Studies on the incidence and cause of dental defects in children. *J. Dent. Res.* 22:309, 1943.
5. Schour, I. & Massler, M., Gingival disease in postwar Italy. *Amer. J. Orth. and Oral Surgery.* 33:756, 1947.
6. Massler, M., Schour, I., & Chopra B., Occurrence of gingivitis in suburban Chicago school children. *J. of Period.* 21:146, July 1950.
7. Tisdall, et al., School Meal Study, 1947-49. The Canadian Red Cross Society, 95 Wellesley St. E., Toronto, 1952.
8. Box, H. K., New aspects of Periodontal Research. *J. C.D.A.* 13:3, 1947.
9. Box, H. K. Concerning the Pathogenesis of Periodontal Disease. *J. of Period.* 19:11, Jan. 1948.
10. Box, H. K., The significance of recent findings in periodontal pathology. *New York State Dental J.* 14:543, Dec. 1948.
11. Box, H. K., Gingival clefts and associated tracts. *New York State Dent. J.* 16:3, Jan. 1950.

Histopathology of enamel caries in reflected light

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TECHNIQUE OF EXAMINATION

THE contradictory statements in the histopathology of enamel caries result from technical difficulties, from complicated methods of examination and from different tendencies of interpretation.

Usually, enamel caries is studied in longitudinal tooth sections which are also approximately parallel to the axis of prisms. Due to this, the prisms are overshadowed by their sheaths, and by the interprismatic substance. This makes a histological analysis difficult and may explain the lack of agreement in descriptions of pathological changes.

Enamel caries should be studied on specimens altered as little as possible, with both mineral and organic components well preserved. The specimens should be ground in a direction perpendicular to the prisms, permitting to differentiate clearly the prisms, the prism sheaths, and the interprismatic substance. The carious lesion should not be examined in one section only, but in several sections, in various depths and directions, in order to obtain an overall view.

The examination by reflected light with Ultropak (Leitz) seems to be the best method for the study of enamel caries. Specimens are easily and quickly prepared for this examination and can be studied in their natural state, without artefacts. Ultropak permits to choose the angle of incidence and direction of light which enables one to see not only the relief with quantitative changes, but also the structure immediately below the surface with its natural color and transparency, so that one can also observe fine qualitative changes.

For the investigation, recently extracted teeth are the most suitable. They should not be allowed to dry, and may be put for a short time into water. Prolonged preservation in water or formaldehyde solution may cause fine changes of the carious lesions, but for a general survey these will be of little importance. The present report is based on observations of several hundred human teeth.

Where the natural surface of the teeth is flat, it can be studied with low magnification. This kind of examination completes the general study of the carious lesion but deeper structural changes can hardly be seen.

Preparations of ground specimens: A small quantity of very fine carborundum powder and some water are spread on an absolutely flat glass plate. Moving the tooth by hand we grind a plane through the carious lesion, perpendicularly to the direction of the prisms in the particular place. After some experience, it is easy to find the suitable direction. (For deeper grinding the electric lathe may prove advantageous.) Then the specimen is washed and the ground surface is quickly polished by hand on a fine emery paper (2/0-5/0), resting on an absolutely flat base. A piece of plasticine is fixed to the slide and the specimen is pressed into it with a special instrument made by Leitz. Thus the ground surface is parallel with the stage of the microscope.

For a general study Ultropak objective U-O 6.5 X, for finer studies objectives magnifying 11 X, 22 X, 50 X are suitable, with the appropriate condensers and with oculars 6 X to 12 X. The angle of light, i.e. the position of the condensor may be adjusted once for most cases, so that the structure of the

enamel is as clearly visible as possible. The revolving diaphragm (Sektorenblende) must be suitably adjusted for every specimen and every studied spot. Most often only one half of the light cone is used. By rotating the diaphragm, the direction of the illuminating beam at which the prisms are best visible is selected. For high magnifications beyond U-O 11 X, it is advantageous to spread a thin layer of immersion oil over the ground surface. If there are some scratches from grinding, they will disappear. (This technic does not allow for the microscopic study of the drying out process and of the hardness of the carious areas, which will be discussed later.)

One may grind the surface repeatedly, which permits the study of the carious lesion in several layers of depth. In case that the surface ground first was not perpendicular to the prisms, it can easily be corrected by re-grinding and polishing.

When studying ground surfaces in reflected light, one is dealing with slight differences in transparency and in the degree of saturation of white, grey, yellow and brown colors. The contrasts of light are too low for ordinary photography.

RESULTS

The surface of enamel. The histological picture of the surface of the enamel is known from Wolf's replica method, and his findings have been confirmed by other investigators. Ultrapak shows also the natural color and transparency and some relations of superficial and deeper structures or lesions.

The early carious lesion is a white bright spot highly reflecting light and therefore standing out intensively against the transparent dark background of the normal enamel. The contrast becomes especially clear when the carious lesion dries out. Some lesions are white, others are yellow, yellow-brown, to deep brown. Defects,

i.e. incipient cavity formations are sometimes seen in the white as well as in the pigmented lesions.

The relations between the carious lesion and the contact surface, the epithelial attachment, the fissures, the lamellae, etc. are seen already at low magnification. Caries in a lamella is not a regular finding, although both, lamellae and caries, are very frequent. Where a lamella is running through the carious area, the outline of the lesion is not changed at all or only slightly.

Some kind of pigmented material of a characteristic yellow-brown color is often deposited on protected areas along the perikymata, inside lamellae or fissures. Many carious lesions have the same color. In carious lesions, in developmental hypocalcifications and along some lamellae this yellow pigmentation can be followed continuously into the deeper zones of the enamel. It is most intensive on the surface while in deeper areas the color decreases. This seems to indicate that the pigment spreads from the surface into the interior of the less calcified lesions. Also other deposits can be observed which have a different gray pigmentation.

Ground surfaces transversal to the prisms. Already at low magnification one can clearly confirm the following fact (which can be observed sometimes also in appropriate horizontal sections): Except for very small initial lesions, practically every carious lesion is not one single pathological focus, but a group of several confluent focuses of various sizes and in various stages. The result is a very variegated alternation of different pathological layers. This seems to indicate that at the same time various processes can occur in different areas of the enamel. Therefore, descriptions which try to fix a typical appearance of carious lesion do not apply to most cases of general practice.

In the carious lesion several types of

pathological changes of the structure of the enamel can be observed. By this technic definite differentiation can be made between changes of the prisms, of the prism sheaths and of the interprismatic substance.

It is important to elucidate by which process each specific change is produced. This will permit to analyze individually compound, complicated lesions, to define their layers, and to understand processes occurring in various areas. Combining different processes into one scheme will not clarify the problem, but by differentiating topographic details, a better understanding of the carious process may be gained.

The normal enamel seen in reflected light presents a special transparency and color. Normally, the fine white net formed by the prism sheaths and the interprismatic substance contrasts only faintly with the background. It is better visible in zones of incomplete mineralization. The shape of the prisms and the width of the interprismatic substance vary in different areas. Normally, the prism sheath cannot be differentiated from the interprismatic substance, excepting for some special areas where there is a greater amount of interprismatic substance.

The initial pathological changes can best be studied in the periphery of very small, simple carious lesions. Of course they are present in most carious lesions, but in complicated lesions their relations may be less clear.

Demineralization with increase of organic matter presents the following aspects:

Fig. 1, stage 1) The sheath and the external layer of the prism are white against a darker transparent background. They contrast clearly with the darker net of the interprismatic substance. There is a clear boundary line between the surface of the prism and the interprismatic substance, but the prism sheath cannot be differentiated from the external layer of the prism.

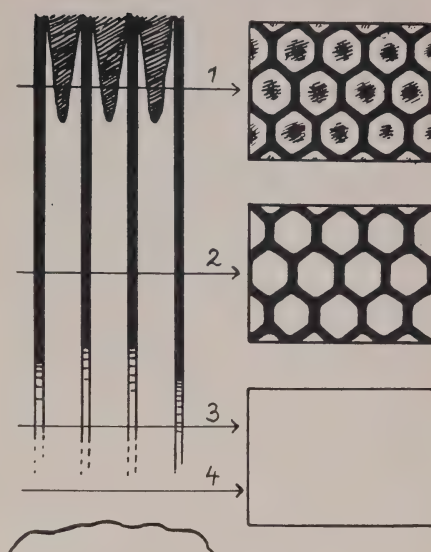


FIG. 1

They form a single white structure which passes into the dark transparent core of the prism.

In the periphery of the carious lesion the prism sheaths are somewhat wider and clearer than in normal tissue. Gradually the external white layer of the prisms become wider and the dark transparent cores narrower. These changes form a relatively thin layer in the periphery of the carious lesion. This layer seen in reflected light corresponds to the periphery of the zone with the cross striation of the prisms, seen in a section parallel to the prisms. This layer is sometimes surrounded by a darker band, more transparent than the adjacent normal enamel, in which the net of the prism sheaths and interprismatic substance is no longer visible. This is the transparent hypermineralized enamel seen on common ground sections.

Fig. 1, stage 2) The prisms are white, highly reflecting against a darker background. The entire cross-section of the prism is white, the boundary against the darker thin net of the interprismatic substance is clear and contrasting.

These two layers present an interesting phenomenon: The changes are not so clear when an absolutely fresh, moisture-containing specimen is first examined. During the observation the white prisms suddenly appear one by one against the transparent background. Gradually they form areas with the afore-mentioned appearance. This phenomenon lasts several minutes, until the lesion reaches a definitive appearance. When the specimen is moistened for a certain time, the phenomenon reappears. Several facts indicate that the structures which so readily lose or take in water and thereby whiten are organic, *i.e.*, demineralized.

Fig. 1, stage 3 and 4) The largest portion of simple lesions is a white, highly reflecting, homogeneous, continuous area without any visible details.

Usually, a simple carious lesion has the following structure: In the periphery, prism sheaths are clearer than normal, and the external layer of many prisms is white. This layer is followed by another with white prisms standing out against the dark net of the interprismatic substance. Finally, the large central portion is white and homogeneous. Probing with a sharp explorer under the Ultropak reveals the white area to be soft, demineralized, consisting probably of organic matter mainly. (Fig. 2, 3.)

The white area is largest on the sur-

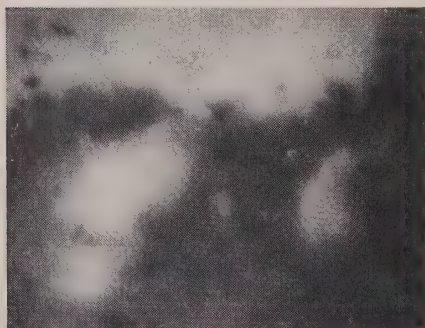


FIG. 2. Periphery of a carious lesion. White prisms, homogeneous white area. U-O 22x, ocul. 12x, magn. 264x.



FIG. 3. White prisms reflecting against a dark background. U-O 50x, ocul. 12x, magn. 600x.

face of the enamel and decreases in deeper layers. This indicates that the afore-mentioned changes are stages of the spreading process of demineralization with increase of organic matter in the enamel. These changes are a well-known part of the carious process. Under Ultropak it can be shown that it is not identical with an artificial demineralization by acids.

The study of the pigmentation and remineralization in compound carious lesions seems to indicate that there are two stages in the development of the homogeneous white area:

Stage 3) There is the white organic substance in which the pattern of prism sheaths and interprismatic substance is still preserved, although not visible in unpigmented state.

Stage 4) The white organic substance is definitely homogeneous and even the net of prism sheaths and interprismatic substance has decomposed.

Stage 5) There is a surface defect, namely a cavity in the white area. The borders and the bottom are soft, smooth, glistening, giving the impression the material has been dissolved. This is the final stage of the simple carious lesion.

In most carious lesions some other processes combine with this main process. The described method is especially suitable for the study of pigmentation and remineralization. The appear-

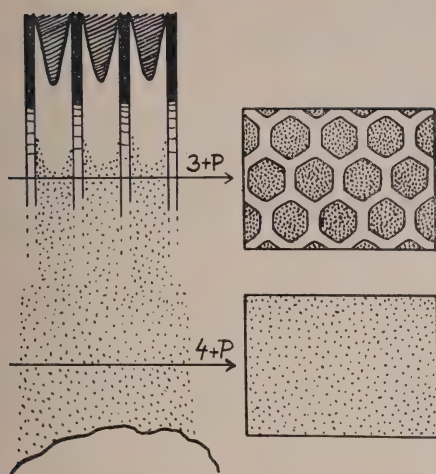


FIG. 4

ance, resulting from combined processes is variable, depending on the period in which the other process joins the main one.

Pigmentation occurring in stage three of the main process results in the following aspect of the carious lesion:

Fig. 4, stage 3) The prisms are pigmented and the net of interprismatic substance appears white. The prisms have the typical yellowish-brown color in various degrees of saturation, from light yellow to deep brown. The areas with light pigmentation still reflect light. The darker areas are not reflecting and in very dark places the net of interprismatic substance is sometimes lightly pigmented. Probing with a sharp explorer under the Ultropak shows that this area is soft, demineralized, and consists probably of organic matter. It is not dissolved by the histological decalcification of the enamel and in the common celloidine sections it presents the pigmented prisms against the white background of interprismatic substance.

Fig. 4, stage 4) Pigmentation occurring in stage four of the main process produces a pigmented homogeneous area. Usually, it is a wide continuous area which is soft, its color varying

from a light yellow, highly reflecting one, to a dark non-reflecting color.

Stage 5) A cavity may be formed in the homogeneous, pigmented and soft area, in the same way as in the last stage of unpigmented lesions.

Pigmentation may be combined with remineralization. Sometimes, sequence and connection of different layers seem to indicate that the white lesion was first pigmented and then remineralized. In more complicated lesions the interpretation of the sequence of the processes might be difficult and the conclusions uncertain.

Remineralization produces the following changes:

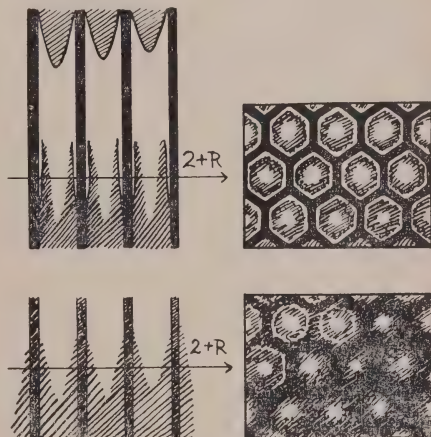


FIG. 5

Fig. 5 top) Remineralization occurring in stage two of the main process: The net of interprismatic substance is dark. The white thin prism sheaths appear separate. The external layer of the prism is dark, transparent, the core of the prism is white. This histological picture is not often seen. It can be found in places where sufficient interprismatic substance is present.

Fig. 5 bottom) Gradually, the white prism sheaths disappear. Then there remain only the white cores of the prisms against a dark transparent background, appearing as round white dots of various sizes. (Fig. 6.)

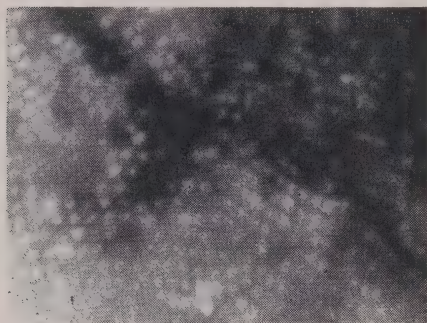


FIG. 6. Arrested caries. White cores of the prisms. U-O 50x, ocul. 12x, magn. 600x.

Fig. 7 top) Remineralization occurring in stage three of the main process: In the white, highly reflecting area some prisms are visible, which present a special transparency and color resembling the prisms of normal enamel. There is a clear boundary between the surface of the prism and the reflecting background. Such a picture can be seen rarely and in small areas only. Very rarely only the prism sheath and the external layer are transparent.

Fig. 7 bottom) Remineralization occurring in stage four of the main process: Produces a homogeneous, continuous area, presenting a special white, not reflecting, cloudy appearance. Sometimes transitions can be observed from the highly reflecting layer 3-4 to the cloudy, not reflecting area where the white color changes gradually into the greyish transparency of normal enamel. Probing reveals this area to be hard, mineralized. Major portions and sometimes the entire lesion may present this appearance.

The microscopical study alone cannot show with sufficient certainty the origin of the mineral salts. It is possible that some of the local remineralizations result from shifting of calcium salts from other areas of the carious lesion. Where large areas or the entire lesion present this character it seems to be beyond any reasonable doubt that one is dealing with remineralization.

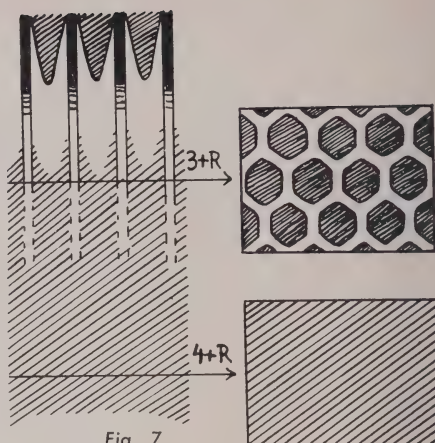


Fig. 7

Pigmentation with remineralization produces the afore-mentioned appearance with the typical yellow-brown color of variable intensity.

Pigmentation and remineralization occurring in stage two of the main process: The interprismatic substance is dark, the white thin prism sheaths are visible. The external layer of the prism is yellowish-brown and transparent, while the core is white. Sometimes the prism sheaths are invisible and only the small white cores of the prisms can be observed against the transparent, yellow-brown background.

Pigmentation and remineralization occurring in stage three of the main process: The prisms are dark, pigmented, the net of interprismatic substance is light yellow-brown and the entire area presents the special cloudy appearance.

Pigmentation and remineralization occurring in stage four of the main process produce a homogeneous dark, transparent area. The intensity of color varies; there may be transitions from a cloudy appearance to the usual transparency. Probing reveals this area to be hard, mineralized. The entire lesion may present this appearance.

In these large remineralized, or remineralized and pigmented areas often the same changes occur as those de-

scribed as the main process. A small area with white highly reflecting prisms appears either on the transparent pigmented background, or on the white cloudy background. Between the prisms the net of interprismatic substance is visible. In the centre of this region the prisms may fuse into a homogeneous reflecting area which is sometimes white, more frequently however, slightly pigmented. In some cases a cavity may be formed in this reflecting area, while in other cases darkly pigmented and transparent spots may be observed there. These changes are probably manifestations of alternation between processes of demineralization and remineralization.

Many other combinations of the typical layers may be seen in various regions of the carious lesions, especially in cases of arrested caries. Several processes occur probably in the carious lesion at different times or at the same time in different parts of the same lesion.

In the first studies with reflected light it might be difficult to differentiate some manifestations of the carious process from incompletely mineralized areas of other origin, such as the lines of Retzius, the enamel hypoplasias and hypocalcifications, but after short experience one should be able to classify changes of normal formation and maturation of the enamel more easily than by common microscopy. We are able to

differentiate disturbances of development, affecting the interprismatic substance and the prism sheaths (presenting a thick white net with a special appearance, fig. 8), from those affecting the prisms proper. Nevertheless, the interpretation of a carious process which spread into areas of incomplete mineralization might be very difficult and the conclusions uncertain.

CONCLUSIONS

When using reflected light for the study of a carious lesion one has to determine first the different layers. This makes it possible to understand which process and which stage are present in the different areas of the lesion. The lesion should be examined in various depths and directions.

The following phenomena can be determined as characteristic features of the carious process:

1. Demineralization with increase in organic matter.
2. Pigmentation.
3. The intermittent character of the process.
4. Demineralization may result in cavity formation, or alternate with remineralization, which latter preserves a continuous surface of the enamel.

It will be necessary to complete and confirm the results of this microscopic study by other methods before further conclusions can be made.

The simple preparation of the specimens for the study in reflected light makes the examination of a great number of teeth possible; one gains great experience and judgment and may select cases of special interest. The examination of fresh specimens in their natural state and at various levels is an additional advantage.

The possibility of studying separately the changes of the prisms, of the prism sheaths and of the interprismatic substance opens new approaches to the study of the histopathology of the enamel.

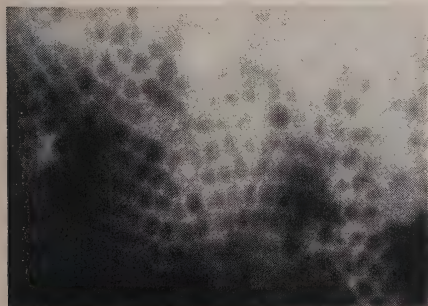


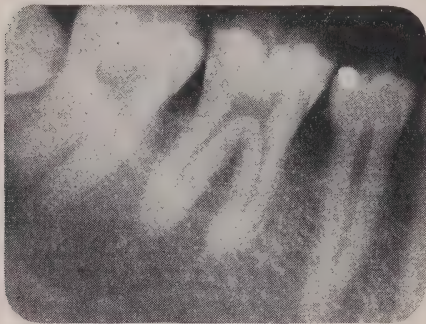
FIG. 8. *Amelogenesis imperfecta*. Thick white net of the interprismatic substance and the prism sheaths, U-O 50x, ocul. 12x, magn. 600x.

Dentigerous cyst

by HAMILTON E. SIMMONS, D.M.D., F.I.C.D.

IN CASES of alveolodental cysts occurring in relation to unerupted wisdom teeth, it is seldom that one is fortunate enough to be able to trace by X-ray evidence, the growth, over a period of years, of the development of the cyst.

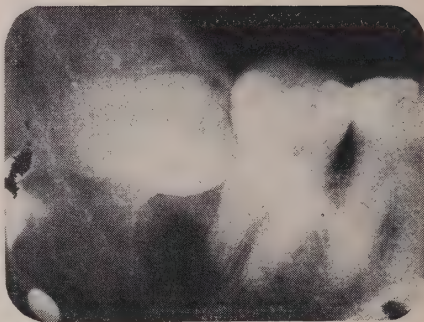
The patient, a male, aged 46 at the time X-ray was taken, experienced no discomfort from the horizontally impacted third molar present. His health was good, his dentition normal and his masticating efficiency quite average.



I.

No visible signs of any Cyst.

Two years later, during a routine check of his teeth, X-ray No. 2 was taken. The walls of the third molar tooth follicle or sacculus, are seen to be enlarging and beginning to extend buccally past the roots of the second molar, giving rise to the formation of a lateral type of Eruption Dentigerous Cyst. It is possible that a local developmental disturbance of the erupting tooth has caused the stellate reticulum to undergo a liquefactive degeneration so that fluid has accumulated between the inner and outer enamel epithelium. The outer epithelium, which is derived from the external layer of the enamel organ, is thus separated from the remains of Nasmyth's membrane, or the inner part of the enamel

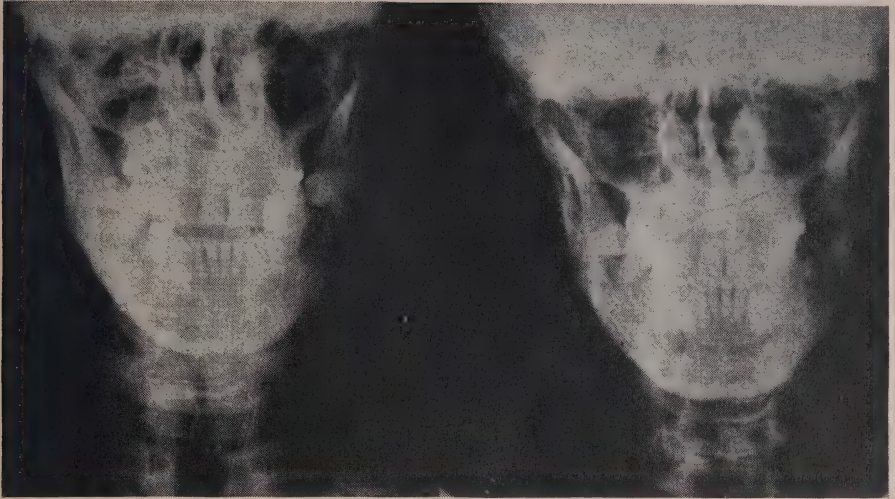


II.

Showing the early stage of the formation of the dentigerous cyst.

organ forming the dental cuticle. This process could be considered the first stage of the formation of the dentigerous cyst. Increase of the fluid content caused gradual increase in the size of the cyst, which in turn caused a flattening of the cells of the epithelial layer, owing to pressure. The slowly growing cyst exerted pressure on the surrounding bone, following the path of least resistance, and thereby stimulated resorption of the adjoining bone by osteoclasts. The patient felt no discomfort at this time.

During the next sixteen years, the first molar became carious and the crown broke away, leaving two roots with chronic apical abscesses infected through the devital and necrotic dental pulps. From this chronic periodontitis an inflammatory exudate extended to the wall of the underlying cyst and infected it. This infective exudate helped increase the fluid in the cyst, and the pressure began to force the buccal and lingual plates outward. The patient began to experience the first serious discomfort, and a weakness was felt during the process of mastication. The second molar became very tender to bite on. There was marked swelling bucco-lingually as the cyst distended the cortical plates and absorbed the



III.

Before extraction and Cystectomy.

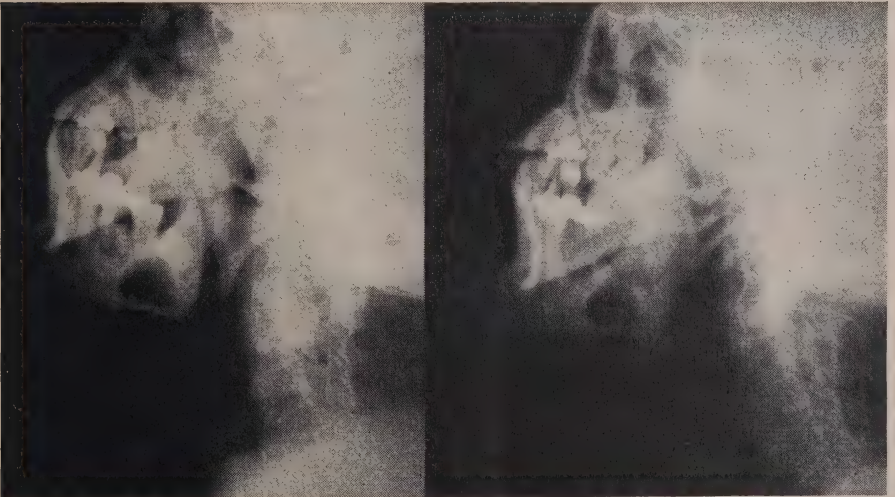
III.

After extraction and Cystectomy.

cancellous bone within. X-ray No. 3 was taken, showing the cyst extending almost through the inferior border of the mandible. The superior border being already weakened by the abscessed first molar and the unerupted third molar, a pathological fracture was

feared. There was some enlargement and tenderness of the sub-maxillary gland on that side.

Under block anaesthetic, the infected roots of the first molar and the second molar were carefully removed. The interseptal bone was then taken

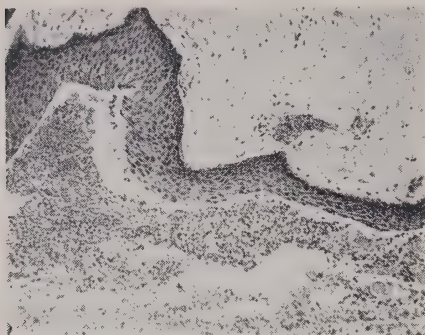


IV.

Before extraction and Cystectomy.

IV.

After extraction and Cystectomy.



V.

Biospy section of Cyst.

Showing squamous epithelium surrounded by fibrous connective tissue, and containing exudate.

away, exposing the cyst lying in its cavity. By carefully freeing the epithelium from the surrounding walls, the cyst was found to envelop the crown of the third molar. Extreme care was required to loosen the third molar and bring it out with the cyst, without fracturing the jaw. The cavity was then filled with Abocillin* ointment and sutured over, leaving a small opening for drainage. No other packing was used.

The patient was seen daily for two weeks, during which time the wound was gently syringed out with warm sodium perborate solution, and the cavity refilled with ointment. Healing progressed normally.

X-rays No. 3 and No. 4 show the mandible before and after the extrac-

*Abbott Laboratory Ophthalmic ointment (Penicillin G. Potassium 1000 Int. Units per Gm.)



VI.

Taken a year after Cystectomy.

Showing bony trabeculae bridging the cavity, normal healing progressing.

tion of the teeth, and the cystectomy.

Illustration No. 5 is a section taken through the cyst showing the flattened squamous epithelial wall surrounded by fibrous connective tissue of the dental follicle, and containing an exudate with destroyed epithelial cells.

A year later the patient was recalled and picture No. 6 was taken. Bony trabeculae can be noted bridging the cavity formerly occupied by the cyst, and the patient reports the jaw as being completely comfortable and normal in function.

Reference: Wm. H. Bauer, Journal American Dental Association, Vol. 27, 1940
Kurt H. Thoma, Oral Pathology, 1950.

Function of Education . . . The highest function of education is to make human experience contemporary; that is, to make it available for use in the life of a man or a nation. Yet a great body of scholarship remains antiquarian, and many scholars withdraw into a grammarian's funk hole because this is safer than to deal with the great issues of the age. As a result society is the poorer for want of wisdom and the understanding than can only come from scholarship.

CORNELIUS W. de KIEWIET, "Education for Survival", The Scientific Monthly 75:61, February 1953.
(Journal of A.D.A., July 1953)

NRC Associate Committee on Dental Research Held in Montreal, 22 October, 1953

by S. J. COOK,

Secretary of the Associate Committee
on Dental Research,
National Research Council,
Ottawa, Ont.

By kind invitation of the authorities of the University of Montreal, arrangements were made to hold the Eighteenth Meeting of the Associate Committee on Dental Research in the Medical Faculty Board Room, on 22 October, 1953. This was the first time that the Committee had met outside of Ottawa, the *raison d'être* being that the Canadian Dental Association had just previously held a highly successful meeting in that city and some of the Committee members from distant points were still there.

Moreover, the Faculty of Dental Surgery of the University of Montreal had just concluded a "Homecoming" to celebrate the fiftieth anniversary of its foundation, and it seemed fitting for the Committee to honour the occasion by holding its meeting within the walls of the magnificent University of Montreal buildings.

In the Chairman's enforced absence through illness, Dr. J. B. MacDonald, Faculty of Dentistry, University of Toronto, was chosen as acting chairman.

Main business of the meeting was the consideration of mid-year reports from the eighteen grantees holding research awards from the Committee this year.

When possible, each report was presented by the grantee, and otherwise by one of the Committee members who had been invited in advance to review the report and discuss the principal findings. In this way full consideration was given to each project.

Since its inception the Committee has supported more than fifty inves-

tigations, some of which have extended over several years.

One of the long-term studies in progress is that of Dr. W. J. Linghorne at Toronto, working under the direction of Dr. Charles H. Best. He has produced experimental pockets in dogs to determine whether or not alveolar bone can be regenerated, and also to find out whether new tissue will form in the region of the periodontal membrane which will both fill in the pocket and become firmly attached to the tooth. His work has provided definite evidence of reparative capacities in this part of the body.

Another research on which brilliant work is being done, relates to the entry of phosphate, carbonate and calcium into teeth, as shown with the help of radioactive elements. Dr. C. P. Leblond is in charge of the study at the University of Montreal. In previous reports he had emphasized only two features of mineral deposition, namely, the formation of new crystals occurring in an appositional manner, and exchange between the atoms at the surface of the crystal and those present in solution. His current results indicate that, in addition to these two phenomena, there may be formation of new crystal material within the dentine (interstitial deposition) and furthermore, that formed crystals may eventually be rearranged. The main conclusions, so far, are that the deposition of mineral elements takes place in the dentine in an area immediately in contact with predentine; the material appears to be deposited in a narrow, sharply defined region beyond the predentine-dentinal junction, and to spread out from that area into the substance of the dentine, especially in the younger animals.

Dr. Leblond observes that the formation of dentine may be considered to occur in three steps: (i) the forma-

tion of a matrix framework, presumably a collagen, which first appears as predentine at the apices of the odontoblasts; (ii) the addition of mucopolysaccharides to the framework of the matrix, changing it from predentine to dentine; and (iii) the appearance of calcium phosphate crystals in the matrix of dentine.

These are notes on only two of the eighteen projects discussed at the meeting, but they serve to indicate the nature of the research projects being sponsored by the Committee.

An important item of business at this meeting was the election of a successor to Dr. D. L. Thomson on the Executive. Dr. Thomson completed his term of office this year and the Com-

mittee unanimously chose as his successor on the Executive Dr. A. W. Ham, Professor of Anatomy, Faculty of Medicine, University of Toronto. Other members of the Executive are: the Chairman and the Secretary of the Committee, Dr. E. Charron, Dean of the Faculty of Dentistry at the University of Montreal, and Brig. E. M. Wansbrough, Director General of Dental Services, Royal Canadian Dental Corps, Department of National Defence, Ottawa. The meeting in Montreal was attended by eighteen members and guests.

The next meeting of the Committee will be held late in February or early in March, 1954, when final reports from the grantees on their year's work will be reviewed.

Progress is Science. The most significant aspect of the present day in science is that we are going ahead energetically and accomplishing much . . . It is far better that we should be embarrassed by the consequences of our rapid progress than that we should be bogged down to a snail's pace.

Vannevar Bush, "We are in danger of Building a Tower of Babel," *Public Health Reports* 68,150, Feb. 1953.
(*Journal of American Dental Association*, October 1953)

Antibiotics possess certain peculiar properties which differentiate them sharply from ordinary antiseptics and disinfectants . . . One of the most important properties of these agents is their selective action upon different cells, be they cells of microscopic forms of life or cells of higher organisms. By utilizing this selective action, one can obtain antibiotics that are able, without injuring the tissues of a higher organism, to affect the pathogenic organisms invading such tissues. This makes possible their therapeutic use. Ehrlich was the first to recognize that the efficacy of a chemotherapeutic agent depends upon the difference in its toxicity to the parasite and to the host. He was carried too far afield by his side-chain theory, and did not recognize clearly, largely because of a lack of sufficient information at that time, that this important difference in the action of a chemical compound is due to the variation in effect that it exerts upon the metabolism of the parasite as compared to that of host cells. The compounds that he used were too "toxic," since they exerted their lethal effects upon the invading organism and upon the patient in about equal degrees. The finding of Woods and Fildes in 1940 that the sulfonamides exert their effect upon bacterial growth by interfering with the normal metabolism of the bacteria was a marked step forward in our understanding of the mechanisms of growth inhibition thus involved.

SELMAN A. WAKSMAN, 'The Changing Concept in Microbiology', *The Scientific Monthly*, 76:129, March 1953.
(*The Journal of the A.D.A.*, August 1953)

ABSTRACTS

Principles of partial denture construction

By COLONEL ELLSWORTH K. KELLY, Dental Corps, United States Army (Madigan Army Hospital, Tacoma, Washington).

The Journal of Prosthetic Dentistry, September 1953.

The principles of partial denture construction are summarized as follows:

1. Provide adequate support on the remaining natural teeth to resist vertical stresses, and to direct those stresses in the direction of the long axes of the abutment teeth.
2. Provide broad coverage of saddle areas so the stresses borne by the soft tissues are distributed over a large area.
3. Provide adequate tooth-borne resistance to lateral stresses (adequate both in rigidity and in number of teeth engaged, so that this

stress is distributed over a number of abutments).

4. Provide adequate retention.
5. Provide for distribution of stress between the relatively rigid abutment teeth and the relatively resilient saddle areas.
6. Have rigid bars and connectors.
7. Avoid covering the free gingival margin around the remaining teeth with denture base or connectors.
8. Decrease the occlusal table by using narrower artificial teeth and fewer teeth.
9. Provide harmony of the occlusal surfaces of opposing teeth, both natural and artificial (this includes recording true centric relation, obtaining as balanced an occlusion as possible, and reducing cuspal inclines to minimize lateral stress).
10. Place the denture teeth over the ridge or lingual to it.

Dental caries control measures

By PHILLIP JAY, D.D.S., School of Dentistry, University of Michigan.

The Journal of the California State Dental Association and the Nevada State Dental Society, September-October 1953.

The cause of dental decay is sufficiently understood to make it possible to control this common disease to a remarkable degree.

Although the process by which teeth decay is complicated, we know that it cannot take place without acid pro-

duced by bacteria. It is also known that some acid-producing bacteria are more vital to this mechanism than others, so that the most effective treatment is planned around the elimination of these bacteria from the mouth and the restriction in the diet of the sugar necessary for this acid production. It is also desirable to produce teeth which are less susceptible to the acid action.

In most individuals, it is impossible to have dental decay on sugar-free diets. A few are so susceptible that

some starches are also harmful. On the other hand, it is sometimes perfectly safe to eat sugar. It all depends on whether or not the patient harbors the decay producing bacteria. Inasmuch as it is possible to determine this by laboratory tests, it is entirely practical to devise a diet which is nutritionally adequate but contains no sugar whenever necessary. It has been well established that dental decay cannot be prevented merely by including certain vitamins and extra minerals in the diet. The restriction of the use of sugar is the only dietary precaution which is important.

More recently it has been conclusively demonstrated that individuals who grow up in cities supplied by water containing the proper amount of fluoride have only one-third the number of decayed teeth usually observed in average populations.

The fluoridation procedure is effective,

practical, and safe. From a physiologic standpoint there are no contraindications to the use of water containing one part per million of fluoride.

Studies conducted at the University of Illinois indicate that it is theoretically possible to control dental caries with ammonia producing substances, but the clinical evidence thus far available emphasizes the need for further study.

Conflicting reports place penicillin dentifrices in a similar position. Inasmuch as the development of penicillin resistant strains of streptococci have been reported in individuals using penicillin dentifrices, this method will be viewed with caution.

Despite the very wide publicity which it is now receiving, there is no evidence which indicates that chlorophyll is of value in the control of dental caries.

Oxytetracycline Hydrochloride (*Terramycin*)

By GEORGE E. MORIN, D.D.S., Claremont, N.H.,
and IRVING G. NATHANSON, D.D.S., Boston.

Journal of Oral Surgery (American Dental Association)
October 1953.

Oxytetracycline was isolated in 1950 and is an antibiotic of outstanding promise with an extremely wide effective range. It is bacteriostatic in its action and has been used with good results against most gram-positive and gram-negative bacteria. It has also been effective against spirochetes, rickettsiae, protozoa, fungi, and some viral organisms.

Oxytetracycline has a low toxicity, but side reactions do occur occasionally, and are mainly of the gastrointestinal upset variety with mild diarrhea. The material is rapidly absorbed from the gastrointestinal tract.

The use of this antibiotic in the oral surgery department of the Boston City

Hospital has been limited in most instances to patients who have not received penicillin or any other antibiotic prior to the administration of oxytetracycline.

ACUTE ALVEOLAR ABSCESSES

All patients with acute alveolar abscesses had large indurated swellings, trismus and temperatures ranging from 100°F. to 102.4°F. All were placed on a regime consisting of bed rest, enema, catharsis, forced fluids, moist heat extraorally and warm saline rinses intraorally. Oxytetracycline was administered in doses of 2 Gm. per day for 48 hours and 1 gm. per day thereafter in divided doses at 6-hour intervals. In all cases there was remarkable improvement after 24 hours, the temperature was normal after 36 hours; there was a notable resolution of the swelling and alleviation of the trismus after 48 hours. In all cases therapy could be discontinued on the fourth to the sixth day. In none of these cases was it

is so small that participation must be extended largely by the interest and initiative of the members themselves.

To quote the Trustees further: "The Plan can be adapted to any need; To the senior practitioners it is an avenue for both safe and profitable investment for retirement income; to the juniors it offers adequate protection for themselves or their families at the least possible cost; to all it offers a flexibility which is adaptable to any need."

The lifetime economic security of Canadian dentists has received earnest and intelligent consideration by the Canadian Dental Association. The vehicle for economic security has been assembled - it remains, however, for each to be his own chauffeur.

Book Reviews

Pathology for Students of Dentistry by

George L. Montgomery. Published by E. & S. Livingstone Ltd., Edinburgh and London, 1953, pp. 305, 133 illus. plus 12 color plates.

As the author clearly states in his preface, the content of the book is confined to the principles of general pathology that are felt to be necessary for students in dentistry, with no attempt being made to enter the special field of oral diseases.

The body of the text is arranged in the traditional manner in chapters that deal with the basic divisions of pathology; i.e. inflammation, degenerations, infectious granulomata and neoplasms. There are a couple of chapters on "systemic" pathology where the relationships of circulatory and respiratory diseases are integrated with dental practice.

The subject is presented clearly and concisely, to the point where the book approaches a compendium of the essentials of pathology. The absence of the more complex aspects of the subject serves to emphasize the really important processes.

The text is supported by 133 excellent photographs and photomicrographs that are well chosen to illustrate important points. The 12 color plates, though attractive and colorful, add little to the value of the whole.

The book is very readable both from the standpoint of clarity and conciseness and of the typography.

H. A. HUNTER

The Dentist's Handbook on Law &

Ethics by W. R. Tattersall & H. D. Barry.

Published by Eyre & Spottiswoode, London, Eng. Pages 328. Price 28s.

The development of dental legislation, together with other legislation affecting the dental profession in the United Kingdom, is presented in a comprehensive manner. Concise summary of the National Health Service Act as it pertains to dental services is given.

The chapters upon the subject of Jurisprudence are based upon the law in the United Kingdom, but apply generally with equal value elsewhere excepting the parts determined by the National Health Service Act and a few other minor points. Each point of law is discussed both under private practice conditions and under National Health Service practice.

To forensic dentistry is devoted two chapters, one to procedures in court and the other to identification by means of teeth and jaws. Canadian dentists will be interested in the inclusion of a description of the Noronic disaster at Toronto in 1949.

Part III of the book is concerned with Income Tax in the United Kingdom and Superannuation under the National Health Service for practitioners which is of less interest to other than British dentists unless it be for comparative purposes.

The appendices contain the three acts of parliament—The Dentists Act of 1878; The Dentists Act 1921; and The Dentists Bill 1951-52. The last legislation was passed by the House of Lords but received only first reading in the House of Commons and it

was felt wise to assess again its value, and for this purpose one of the continent's most outstanding and reliable actuarial organizations was retained. In brief, a summary of their findings is as follows:

1. The C.D.A. Pension-Assurance Plan is highly commended in keeping with previous reports from other actuarial firms made at the request of the Executive.
2. The rates are stated to be lower for the same benefits than can be obtained elsewhere by individual dentists as far as can be found.
3. It is shown that the basic actuarial rates are the same as used in all other plans and the lower premium rates are the result of low administrative charges and no agency commissions. (2.6%).
4. The policies are stated to be free from danger clause.
5. No question arises respecting the security of the policies, each policy issued being an individual contract is a distinct advantage to the individual.
6. The Association is advised to make certain of the retention of the plan because it is so advantageous for its members.
7. It is pointed out that the success of the plan depends upon the cooperation and support of the Association.
8. Certain recommendations are made in respect to the operation of the plan. These may be summarized in saying that the methods should be on a high ethical plane in keeping with professional action rather than attempting to copy ordinary methods of selling insurance.

The dentists of Canada, therefore, can be assured that this Plan has received careful scrutiny and now all that remains for its complete success is the active support of the profession. Because of the fact that the dental profession alone possesses such a program and also that the results are receiving careful observation by other groups with a view, possibly, to adoption of a similar scheme, it is understandable that vociferous opposition is being heard from certain individuals engaged in the insurance field.

The profession should remember, as was stated in the summary above, that the basic actuarial rates are identical to those used in other plans and the saving accrues to the profession through the low administrative charges. The following information taken from the report of the Superintendent of Insurance should make that fact very clear:

Company	Cost of Commissions and Agency Expenses	Percentage which Commissions take of Total Premium Income.
A.....	\$ 4,405,730.00	11.9%
B.....	\$ 5,010,097.00	15.6%
C.....	\$ 5,486,552.00	13.4%
D.....	\$ 2,706,562.00	15.4%
E.....	\$ 7,586,106.00	16.9%
F.....	\$ 7,066,503.00	13.9%
G.....	\$ 9,119,615.00	13.5%
H.....	\$ 3,951,189.00	12.9%
I.....	\$ 5,651,181.00	15.5%
J.....	\$16,084,582.00	10.4%

This reduction from an average of 13.9% for the other firms to 2.6% for the C.D.A. Plan represents a direct saving to the participant. The expense margin

EDITORIAL

Economic Security in Dental Practice

Probably one of the greatest concerns of the members of the dental profession is the necessity for economic security for themselves and for those dependent upon them. Following several years of expensive educational preparation and a high capital outlay in initiating his professional establishment, the dentist then becomes entirely dependent upon his own endeavours to develop and maintain his economic requisites.

What are some of the responsibilities with which he must be cognizant and further must take the necessary action to attain and maintain? A dentist must provide for the overhead experienced in the conducting of his practice—an overhead which exists, incidentally, in large amount whether or not he is able to practice full time. He must provide adequate support in all its many aspects for those dependent upon him. Adequate leisure time in the form of vacations is a necessity to maintain physical and mental well-being. The dentist must provide for continuing education during his active years of practice, and upon retirement must have accumulated sufficient adequate resources to maintain him and any still dependent upon him for the remainder of life.

Certain occurrences or events oftentimes make it difficult and even impossible to furnish those basic needs. Sickness, accidents, premature demise can and do prevent the attainment of a family's economic security.

The Canadian Dental Association had long been aware of this need which is peculiar to those who are engaged in the private practice of a profession. For many years the Executive and the Insurance Committee expended untold hours in a search for the type of program which would meet the profession's requirements. On more than one occasion the project was almost abandoned because of the seeming hopelessness of the task. Many plans were considered and discarded because of obvious shortcomings, and the fact that over eight years were spent before the present C.D.A. Plan was adopted attests to the thoroughness with which the group entrusted with this responsibility discharged its obligations.

One point should be emphasized when a view of the activities relating to the formulation of this Plan is being discussed—this Plan was produced entirely by the members of the Executive and Insurance Committee with the assistance of a consulting economist *before* any underwriters were asked to undertake the legal responsibilities for the contracts. In other words this program was produced for members of the profession by members of the profession. This fact alone should engender a sense of confidence in anyone considering participating in the program.

Before presenting the Plan to the members of the profession through their representatives on the Board of Governors it was obvious that independent actuarial approval should be obtained. For this purpose the services of two firms—one in Canada and one in the United States—were engaged and each, working independently of the other, gave the C.D.A. Plan sound endorsement.

Following many months during which the Plan was actually implemented it

necessary to resort to extraoral incision and drainage. In all cases the offending tooth was removed on the first day.

ACUTE ALVEOLAR ABSCESSES (Patient Not Hospitalized)

Thirty-five cases of alveolar abscess with moderate swelling and trismus were treated on an outpatient basis with 1 Gm. of oxytetracycline daily in divided doses. Impressive results were noted in all cases, with resolution of swelling, alleviation of trismus, and discontinuance of therapy in from 3 to 6 days.

VINCENT'S INFECTION

Twenty-eight cases of Vincent's infection were treated with oxytetracycline daily administered systemically. In all cases, acute symptoms were relieved in from 24 to 48 hours.

Oxytetracycline therapy was supplemented by saline mouth rinses.

DRY SOCKET

Ten Cases of dry socket were treated with oxytetracycline paste. Therapy consisted of packing the socket with a plain gauze strip impregnated with oxytetracycline paste. This was supplemented by 1 Gm. of oxytetracycline daily administered systemically. Dressings were changed daily for 3 to 5 days. In no case was it necessary to continue therapy beyond the fifth day.

FRACTURE

Oxytetracycline elixer was used in one case of fracture. In this instance administration of oxytetracycline had to be discontinued because of diarrhea and vomiting on the third day of therapy.

Vital pulpotomy

By K. E. LAWRENCE, D.D.S.

Journal of Dentistry for Children, Third Quarter 1953.

Technique for performing vital pulpomies on a vital permanent tooth:

1. Give a local anesthetic—infiltration on maxillary anterior teeth—conduction anesthesia on mandibular anterior teeth.
2. Isolate tooth. The placement of a rubber dam is the ideal, but in some accident cases this is impossible.
3. Sterilize area and tooth—seven per cent iodine is excellent for this purpose.
4. Using sterile No. 2 or No. 4 round burs, remove remaining dentin over the incisal of pulp chamber.
5. Using small sterile spoon excavators with as little trauma as possible, remove pulpal tissue from the coronal portion of the pulp chamber.
6. Gently pack the pulp chamber with sterile cotton. Allow to remain there a few minutes.

7. Remove cotton and pack pulp chamber with another pledget of cotton that has been saturated with U.S.P. liquid phenol. Be sure that the excess phenol has been removed from the cotton so that the pledget is only mildly damp with phenol. This will control the hemorrhage most adequately.
8. Mix a thin creamy mix of zinc oxide and eugenol and after the phenol-cotton dressing is removed, gently force into the pulp chamber over the pulpal tissue in the root canal. Be certain that no excess pressure is exerted on the zinc oxide-eugenol pulp chamber filling.
9. Place a thicker mix of zinc oxide and eugenol in an orthodontic band and gently insert to place over the fractured tooth.
10. After several months of observation and checking by means of radiographs, a permanent restoration can be fashioned for the tooth.

remains to be seen if it will be re-introduced. Other appendices include Guidance for Professional Conduct and procedures in disciplinary matters.

The book is well written and the subject matter is presented in clear and concise manner. Interest on this continent has been great as to how the introduction of compulsory health insurance has affected the dental profession in Great Britain. This information can be ascertained explicitly from the subject matter presented. D. W. GULLETT.

Orthodontic Theory and Practice. (Second revised, expanded edition). By Samuel Hemley, D.D.S., F.A.C.D. Published by Grune & Stratton, Inc., New York 16, N.Y. Pages 591. Price: \$14.50.

This text is identical for 350 pages with its predecessor, "Fundamentals of Occlusion." The additional 200-odd pages in the new edition consists of an historical summary and a technical and scientific critique of a number of theories of diagnosis and treatment which have been, or still are, of considerable prom-

inence in Orthodontics and which, being radical in concept and not by any means universally accepted, form centres of disagreement within the specialty. For example, the questions of the Orbital Law of the Canine, The Key Ridge and the Mandibular Incisor are dealt with.

Aside from the fact that the evidence for and against these ideas is summed up here, this may be an old story to older practitioners. It is, however, of great value to students and younger practitioners for obvious reasons.

It is axiomatic that, with the possible exception of its author, no text completely pleases any teacher and this one does not break the rule. However, in its approach to Orthodontics via the fundamentals of bone growth and facial development it satisfies a definite need.

Although in his consideration of Etiology the author unconvincingly dodges the issue of heredity, his handling of the local causes of malocclusion is excellent.

This book appears to be the best elementary text available. PHILIP S. CHRISTIE

The Association

Four Dental Graduates — Members of Parliament

The first session of the 22nd Parliament of Canada opened on Thursday, November 12th, 1953 with four dental graduates as members of the House. As far as can be ascertained this constitutes the largest number of graduates in dentistry ever to be elected.

W. M. Buchanan — graduated from Baltimore College of Dental Surgery in 1923 and has practised at North Sydney, N.S., ever since. He was elected to represent the electoral constituency of Cape Breton North and Victoria last August.

J. L. MacDougall — graduated from the Royal College of Dental Surgeons, Toronto, in 1923. He practised for a few years following graduation in Western Canada and has been active politically for a considerable number of years. He represents the Vancouver—Burrard constituency and his home is in Vancouver. He is now beginning his third term in the House.

H. P. Mang — graduated from the Royal College of Dental Surgeons, Toronto, in 1923. After graduation he practised for a few years in Western Canada and then took up farming. He was elected last summer to the Federal House for the first time and represents the constituency of Qu'Appelle, living at Edenswold, Sask.

W. A. Pommer—graduated in 1920 at the Royal College of Dental Surgeons, Toronto, and has practised at Winnipeg, Man. He represents the constituency of Lisgar, Man., with his home address at Manitou, Man.

A certain similarity exists in these four members in that they are listed in the parliamentary list, just issued, as all being of liberal political affiliation. It may also be observed that three out of four graduated in the year 1923.

Facts on Fluoridation

A publication entitled "Facts on Fluoridation" has been published and is now available for distribution. The content of this publication consists of proven factual data relating to the fluoridation of com-

munal water supplies which has been prepared by the Research Committee. Copy will be sent free on request. Those desiring a copy should write immediately to Canadian Dental Association, 234 St. George Street, Toronto. Requested copies will be forwarded as soon as available.

Canadian Congress of Labour on Health Plan

In reporting the recent Annual Convention of the Canadian Congress of Labour, the Labour Gazette makes the following statement:

"The CCL continues to press for a national health plan that will provide 'adequate medical, surgical, optical, dental and hospital treatment' for all Canadians. The convention adopted a resolution suggesting that such a plan be administered in a manner similar to unemployment insurance.

Other resolutions asking in addition for the calling of a Dominion-Provincial conference to 'decide the arrangement for joint action,' recommending that the Canadian plan be modelled after Great Britain's and urging adoption of the plan at the 'earliest possible moment' were rejected by the resolutions committee.

The committee also deleted from the approved resolution the request that the plan be 'free.' Explaining this action, Harry Chappel, committee chairman, said: 'Nothing is free. What we want is an adequate national health plan, whether free—paid from general taxation revenues—or contributory.'

A delegate who agreed with this state-

ment added that many don't realize that we are already paying the cost of a health plan through hospital bills and medical charges. 'What a plan will do is spread the cost over all, so that those who don't have the ready cash will not be denied medical attention when they need it,' he said.

At its convention in August the TLC demanded a 'Government-subsidized, contributory health insurance scheme' providing much the same things as the plan recommended by the CCL."

Supporting Membership — International Dental Federation

Through the participation of the Canadian Dental Association as a member of the International Dental Federation, C.D.A. members are offered the privilege of becoming Supporting Members of the International Dental Federation. Such membership includes subscription to the F.D.I. Journal, which presents affairs related to dentistry on a world-wide basis, together with issues of the Newsletter.

The membership fee in Canada is \$9.00 per annum. The official year of the Federation begins on January 1st.

A number of Canadian dentists are F.D.I. members and it is most desirable that the number be increased. Cheques for the above amount should be made payable to Don W. Gullett, National Treasurer, 234 St. George St., Toronto.

The Library

The Library of the Association consists of practically all the books related to dentistry which have been published during the last ten years. A considerable number of volumes published earlier are also available.

The Library has been made possible through the generosity of interested members of the Association. All monies received are used for the purchase of books. The Association bears the cost of administration.

For the benefit of members and all others interested, the library is open daily from 9.00 a.m. to 5.00 p.m. except Saturdays and Sundays. All dental periodicals are available.

Books may be borrowed by the membership by writing: Librarian, Canadian Dental Association, 234 St. George St., Toronto.

Additions to the Library

BLACKBURN, R. H.

A joint catalogue of the serials in the Libraries of the city of Toronto. 5th ed. 1953. 602 p.

DUNNING, W. B. and DAVENPORT, S. E.

A dictionary of dental science and art. 1936. 635 p. illus.

GUEDEL, A. E.

Inhalation anesthesia. 2nd ed. 1952. 141 p.

HALS, Einar.

Fluorescence microscopy of developing and adult teeth. 1953. 154 p. illus.

RUPPE, Ch.

Maladies de la pulpe et monarthrites alveolo-dentaires. 1948. 64 p.

Committees and Councils

Publications

Some deliberations of this committee will be of interest to C.D.A. members although it is early in the Association year. The writer has assumed the chairmanship of the committee from Dr. P. G. Anderson, and two new names have been added to this year's committee, Dr. J. D. Purves and Dr. J. E. Tilson. The names of Dr. H. Everett Leyland, Ontario, and Dr. D. Hugh Munro, B.C., have been appointed to the editorial staff. Then in May of last year Dr. Wesley J. Dunn was appointed editor.

Naturally with a change in the personnel directing the Journal, some modifications are to be expected. These alterations are founded on the policy and accomplishments of those who have gone before and are instituted with the purpose of making your Journal still more attractive and useful to you.

Let us start with the cover. After wearing an overcoat for a number of years, no matter how good the quality or style, one desires a change. So with your Journal this issue presents a new jacket. Your editors and committee like it, and we sincerely hope that you will.

The format of the Journal has also been under study. Certain revisions appear in this issue, but total revision will not be made until the April issue. Your committee is ever-conscious of the cost of producing your Journal and it is with this in mind that some of these changes have been made. It might be of interest that this committee is responsible for the handling of some \$56,000.00 per year, which is no small amount.

It has been pointed out that if the editorial-advertising ratio were changed the cost of publishing the Journal could be reduced. Your committee has tried to maintain a 50-50 ratio in a 112-page issue. The objective of the committee is to publish a scientific journal rather than a medium for advertising. Increasing the advertising results in a loss of space for editorial subject matter. We feel that neither you nor the editors would be too happy with such a loss.

The committee also received the following recommendation from the Annual Meeting: "That the advertising material accepted be in keeping with reasonable professional standards." This will receive careful consideration and attention.

New features that have been suggested are:

- a) Economics—the needs of dentists and how the C.D.A. Insurance Plan can be applied to meet those needs.
- b) The Library—an explanation of the methods of using the library and an up-to-date list of the additions to it.
- c) Reports of Committees—an interim report of the deliberations of the various Committees to keep the membership informed of Association activities.

The announcement page has also been rearranged. The items will be placed in chronological order and the name and address will be furnished so that those interested may write for further information.

The above is a somewhat brief report of the activities of your Committee on Publications, all of which is respectfully submitted.

Frank Martin, *Chairman.*

Economic Security

EDITOR'S NOTE: This is the first of a series of articles by Mr. Williamson on the subject of insurance—a matter of vital concern to every member of the Profession. Questions concerning any phase of the problem are invited: individual problems will be answered personally; questions of general interest will be made the subject of future articles. During the months which follow Mr. Williamson will give consideration to the following subjects—all relating to the Economic Security of our profession.

Outline of the Series of Articles

- II What is the effect of the Agency System? —expense ratios and premium rates.

What Is Insurance?

By E. L. R. WILLIAMSON, M.B.E., B.P.A., F.R.E.S.

Consulting Economist, and Administrator of the C.D.A. Plan

“We need to be reminded more than we need to be educated” is an old and true adage. In the same way that lectures and clinics are held to refresh memories on subjects not recently dealt with, it seems desirable to introduce a series of brief dissertations on various aspects of insurance by recalling the fundamentals.

The basis of all personal insurance is “mortality,” or the average rate of death—or disability—as determined by actuarial science. The mortality rate controls life insurance, family income, retirement pension, disability income, and all other assurance risks. Within a group of the size of the membership of the Dental Profession in Canada the rate of disability and decease can be determined with an high degree of accuracy—the only thing undeterminable is “who the lightning will strike.” The vast majority of the unfortunate ones will not have had sufficient time and opportunity to amass the requisite

- III Economic Needs vs. Policies. —types of contracts and examples of mal-adjustment of contract to needs.
- IV Pitfalls of Accident and Health Insurance. —the “danger clauses”—examples (E.g., “20-day” clause)
- V More Pitfalls of Accident and Health Insurance. —statistics vs. the coverage given (Company emphasis of accident as against sickness)
- VI Open Article to answer questions, or topic suggested.
- VII How to Calculate the “value” of an Insurance Contract —Life expectancy — Cash Options — Return for \$1.00
- VIII The Economic Needs of Professional Men —Special exposure—practical examples
- IX Meeting Special Needs through Insurance. —mortgage—sinking fund—collateral.
- X Educational Insurance. —type of contract — rate of return — self-completion.
- XI What the Agent Costs the Policyholder —commissions and their proportion of the expense.
- XII Is Insurance Good as an Investment? —Examples including comparison with Investment Trust.
- XIII Taxation Advantages.

resources to meet the disaster, but, collectively, the group can do so.

Insurance is, therefore, basically, a pooling of risk, in which all the members of a given group contribute at a rate sufficient to meet the needs of those whom it has been pre-determined will be struck down.

It has been found, however, that the fund so collected can be put to work, and the interest earned can be applied to reduce the individual contributions to the common fund. Interest, then, is the second factor in insurance.

We now arrive at the third factor in insurance: The cost of securing the co-operation of the group and managing the common fund. The insurance policy principle now may be expressed in the following equation:

The Group

Mortality

+ Cost of Operation

—

by the Fund

Interest Earned

=Insurance Premium

It will at once be apparent that mortality is a fact which cannot be controlled or varied. So also largely is the case with interest earnings, since the

investment of trust funds is rigidly controlled by law. *It is only as regards the factor of cost of operation that economies can be achieved which will justify appreciable reductions in premium rate.*

If the co-operation of the group can be achieved economically and efficiently, a low premium rate can be obtained; if a large number of persons (e.g., agents) must be employed to get the group together and to obtain their contributions to the common good, then the cost of operation, or the "expense ratio" will be high, and the premiums increased in direct proportion.

Business and industry have for many years appreciated the economies to be

achieved through collective action, and their employees have been the beneficiaries of insurance and pensions at rates substantially below those for similar benefits sold in the ordinary way as to individuals.

The Canadian Dental Association is the first Professional Society to make the economies of collective action available to a professional group as a whole. In essence, the C.D.A. Plan is the mathematical result of a reduction in the cost of operation. Whether a professional group can successfully substitute voluntary co-operation for the compulsory co-operation secured by business and industry is the only question.

The Corps

Brigadier E. M. Wansbrough attended the Annual Meeting of the Association of Military Surgeons of the United States held in Washington 8-11 November, 1953, and took part in clinical symposia at selected government hospitals and medical centres in Washington.

Lieut.-Col. T. L. Marsh addressed the opening dinner meeting of the Ottawa Dental Society, held on 13 November, 1953 in the Chateau Laurier Hotel.

No. 1 Coy. R.C.D.C. (R.F.), commanded by Lieut.-Col. H. L. Windrim, held a mess dinner at the Active Force Officers' Mess, London, Ont. on Wednesday, 9 December, 1953.

The formal presentation of the Moore Trophy was made during the evening. This trophy is awarded annually to the unit judged most efficient in the R.C.D.C. Reserve Force.

The dinner was attended by Major-General H. D. Graham, C.B.E., D.S.O., E.D., C.D., General Officer Commanding, Central Command; Brig. E. M. Wansbrough, D.G.D.S.; Col. H. S. Kirby, O.B.E., C.D., Acting Area Commander; Honorary Lieut.-Col. S. A. Moore, Lieut.-Col. J. F. Blair, D.S.O., and senior Active and Reserve Force officers of Western Ontario Area.

At the last annual meeting of the Royal Canadian Dental Corps Association, tangible interest in the R.C.D.C. Reserve Force was evidenced when it was decided to institute the following awards:

- (a) A cash prize of seventy-five dollars to the R.C.D.C. (R.F.) unit securing the highest standing in the R.C.D.C. (R.F.) General Efficiency Competition.
- (b) A cash prize of twenty-five dollars to the R.C.D.C. (R.F.) unit securing second highest standing in the R.C.D.C. (R.F.) General Efficiency Competition.

The first awards will be made in the 1954 competition and presentation will take place during the 1954 annual meeting of the Royal Canadian Dental Corps Association.

Lieut.-Col. H. L. Harris, Command Dental Officer, Eastern Command, Halifax, N.S., attended an Advanced Course on International Affairs held at Hart House, Toronto, 7 to 10 December, 1953.

The following officers have returned to Canada, after service in Germany, with No. 1 Field Dental Coy. R.C.D.C. (formerly No. 27 Canadian Field Dental Unit):

Majors—N. A. Butcher, M. C. Cole, R. E. Dyer.

Cpts.—W. H. Carter, J. E. Graff, J. A. Lauziere, E. J. McNiece, J. M. Smith.

The Provinces

Alberta

Dr. G. M. Little, City Medical Health Officer, addressed the members of the **Edmonton & District Dental Society** on December 1st and was introduced by Dr. W. E. Webber, a member of the Society.

Dr. Little spoke of the need to enlarge school dental examination services, possibly to even include pre-school children. He indicated that Dental Health Services were up for revision in this city and many plans for improvements were being studied. Also he warned a new comprehensive service was not to be expected in the immediate future. He felt increased adult education on dental matters a necessity. Dr. Little concluded by thanking the Edmonton Society for its co-operation, advice and investigations on improving school dental health services.

At the conclusion of Dr. Little's remarks, Dr. Scott Hamilton suggested that more information should be made available to the public concerning fluoridation. The fact that the Edmonton Society and the University Dental Faculty endorse the plan for reducing decay by fluoridation should carry some weight, he felt.

Dr. H. R. MacLean, as the Dental Advisor to the Alberta Research Council, investigating fluoridation of communal water supplies, reported that the research council would be bringing forth its findings in the near future.

Dr. Little was thanked for addressing the meeting by Dr. C. G. Duke.

A study club to examine the **Canadian Dental Association's Pension and Insurance Plan** was set up under the chairmanship of Dr. R. S. Van Alstine. The purpose of the club was to establish certain points and questions for presentation to Mr. Williamson at his proposed meeting after the New Year. Dental Students at the University of Alberta are to be invited to participate as the plan likely would prove of great benefit to them.

B. M. M.

Two new members have been added to the academic staff of the Faculty of Dentistry, University of Alberta, with the start of the fall term. They are Dr. R. S. Van Alstine, who has received his Master of Science degree from the University of Michigan after completing a three-year course in Oral Surgery; and Dr. D. G.

MacGregor, who until recently practised at Grande Prairie, Alberta.

Dean Scott Hamilton recently conducted a surgery clinic for the Peace River Dental Society, which took place at the town of Peace River.

The Survey Team of the Canadian Dental Association, which is making a final inspection of the Dental Schools in Canada, was at the University of Alberta from November 1st to 5th. This team consists of Dr. A. C. Lewis, Dean of the Ontario College of Education, Dr. A. L. Walsh, former Dean of the Faculty of Dentistry at McGill University, and Dr. H. W. Reid, past president of the Canadian Dental Association.

Dr. Philip E. Blackerby, director of the Division of Dentistry, W. K. Kellogg Foundation, Battle Creek, Michigan, was a recent visitor to the school. He came to discuss the establishment of a School for Dental Hygienists at this university.

British Columbia

Two graduates of dental schools in England and a graduate of the University of Melbourne, Australia, are among the 13 dentists who were successful in passing the fall examinations set by the **College of Dental Surgeons** of B. C. for license to practise in the province. The other ten successful candidates were: six from Alberta, two from McGill, and one each from Oregon and Toronto.

The **Division of Preventive Dentistry** of the Department of Health and Welfare gives a report of services for 1952-53:

"During the school year 1952-53 preventive dental services have operated continuously in three health units, in which the service was provided to 8 school districts, and during some months of the year, in one further health unit to 3 additional school districts. These services were in their second year of operation.

"The total enrollment of Grade 1 pupils in the province in the school year 1952-53 is estimated as 21,500. Of these children 509 preschool children and 7,285 Grade 1 pupils received complete dental treatment. In addition, a further 2,121 children, preschools and pupils of Grades 1, 2 and 3, were restored to dental health through community dental clinics where-in co-operated a further 25 dentists on a part-time basis. These clinics operated in an additional 17 school districts. At the close of 1953, 42 such clinics were organized; at the close of 1952 there were 19."

Included in the service has been education of both parents and children in the prevention of dental disease. An example of the high standard of treatment is revealed by the fact that among 1,463 children only 14 secondary teeth were extracted, and 10 tooth services were restored for every tooth extracted.

Dr. Emery Jones was feted on November 12th by a complimentary dinner held at the Westminster Club. Hosts were members of Dental Electoral District No. 2, which comprises New Westminster, the Fraser Valley and part of Burnaby.

After cocktails 46 men sat down to dinner to honour Dr. Jones upon his retirement from 41 years of active practice in the Royal City, and for representing his district for over 30 years on the Council of the College.

On behalf of the group Dr. Dick Butler presented the honoured guest with a brief-case bearing a suitably engraved plate. Drs. Jack Barber, Charles Mark and George Froom also spoke, lauding the excellent service rendered by Dr. Jones during the past years.

The arrangements were in the hands of a committee headed by Dr. Jack Chambers, who also acted as chairman of the banquet.

The **Victoria and District Dental Society** had as lecturer at their November meeting Dr. Simon Marinker, a local surgeon, who spoke on "Surgical Considerations in the Anatomy of the Mandible," illustrated with slides.

The society decided to provide lecturers for the nurses in training at the Jubilee and St. Joseph's Hospitals.

The members expressed condolence to Dr. J. C. Foote (2T4) upon the death of his wife.

The **Vancouver and District Dental Society** at its December meeting heard a lecturer on paedodontics, Dr. Irwin Beechen of the College of Physicians and Surgeons, San Francisco, who kept his word when he guaranteed that no one would go to sleep while he was speaking.

His afternoon talk dealt with the initiation of a child into a dental practice, diagnosis, planned treatment, economic aspects, and Dr. Sweet's cavity preparation for primary teeth. The evening topic was "Unusual Problems in Children's Dentistry and Their Treatment."

Thirteen men were unanimously voted into the society, and the membership announced that nine more would be voted on in January.

The **Upper Island Dental Society**, newly organized last year, held meetings each month at Parksville which were well attended. In fact, so much interest was evinced that after the dinner and the clinic, discussions were prolonged until after midnight on each occasion.

The clinician for October was Dr. John Folkins of Vancouver, on "Oral Surgery." The November meeting was addressed by Dr. A. F. Rader, also of Vancouver, on "Dentures."

Dr. Bruce Gordon of Courtenay is governor of Rotary for his district. He has already made 40 of his 62 official visits, which range from Nome, Alaska, to Chehalis, Wash. Dr. Gordon claims fame because both sides of his family were in B.C. before it was B.C.; one branch coming via the Horn, one overland, for an eventual meeting in Victoria.

—D. H. M.

Ontario

An event of rather unusual interest took place in the city of Kingston recently. The occasion was the initiating of the dental health survey in the elementary schools of Kingston, with 20 dentists and their assistants taking part on a voluntary basis.

Under the dental public health committee and working in conjunction with the local Medical Officer of Health and the Ontario Department of Health, the dentists have set as their goal a complete survey of the nearly 7,000 Kingston elementary school children as to the condition of the teeth of this considerable number of junior citizens.

The committee, working with Dr. Robert Grainer of the Ontario Department of Health, the chief of dental statistics and research, worked out a comprehensive programme that would take immediate recognition of the dental health of every public and separate school child, and that would also give the basis for the establishment of a definite system of tooth decay prevention.

Taking part in the survey were Doctors E. E. Johns, A. M. Clarke, R. B. Bishop, J. C. Broom, H. K. Campbell, E. W. Connell, A. P. Cooke, Marie Davis, L. E. Downey, J. H. Gowland, J. D. Lyon, J. E. Malo, A. W. O'Hara, C. M. Rhodes, E. B. Sparks, N. B. Sproul, H. A. Stewart, W. H. Treleven, S. H. Watson and G. F. Wright.

Assisting the dentists were their nurses who during the day handled much of the clerical and statistical work.

At a recent meeting of **The Brant County Dental Society**, the following were named to offices:

Dr. R. Lorne Scott—President.

Dr. R. C. McLaughlin of Paris—Immediate Past President.

Dr. D. J. Badke—Vice-President.

Dr. A. V. McDonald—Secretary-Treasurer.

Dr. John Nikiforuk and Dr. Watson Race—Councillors.

At the same meeting the Society decided to appoint a Committee to investigate ways and means of promoting dental health education. Named to the Committee were Dr. Bradly Linscott of the Brant County Health Unit, Dr. J. R. Edmunds and Dr. F. J. Wentworth.

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The Annual Winter Clinic of the Academy of Dentistry, Toronto, was held at the Royal York Hotel on November 26th. Over 400 dentists availed themselves of the opportunities of scientific advancement and social fellowship. The arrangements for the Winter Clinic were made by the Winter Clinic Committee under the chairmanship of Dr. W. J. Smith, and this group prepared an excellent programme for all in attendance. The Limited Attendance Clinics were given by Dr. S. R. Korf, who took as his subject "Paedodontic Pitfalls in General Practice," and by Dr. F. T. Pearson who spoke on the subject "Patients Prefer Plastics." Both groups were well attended. The following were the Clinicians and their subjects: Dr. J. E. Moser—"Radiographic Technique"; Dr. I. H. Ante—"Coloured Photography in Dentistry"; Dr. J. B. MacDonald—"Modern Concepts of Focal Infection"; Dr. T. R. Marshall—"What's Your Fee and Why?"; Dr. A. I. Arshawsky—"Selection of Cases for Endodontic Treatment"; Adrian Dingle—"Relaxation by Painting"; Miss Kay Kipling—"Interior Decorating for the Dental Office"; Dr. A. L. Posen—"Interceptive Procedures in Orthodontics"; Dr. J. E. Speck—"Restorative Dentistry in Periodontics"; Dr. D. C. Geddes—"Amalgam—Discussion of the application of an approved Technique"; Dr. R. R. Butler—"Prosthesis—McGrane Technique"; Dr. J. F. Methven—"Basic Extraction Procedure"; and Dr. R. L. Scott—"Operative Dentistry for Children."

As well as the above, approximately 30 Clinicians presented Table Clinic presentations covering the subjects of Operative Dentistry, Paedodontics, Periodontics, Prosthetics, Exodontics, Radiodontics, Orthodontics, Endodontics and Dental Public Health. These presentations were well attended and much appreciated by

the dentists in attendance. The Luncheon Speaker was Mr. Wesseley Hicks, a columnist for the Toronto Evening Telegram. In the evening a delightful dinner was arranged after which entertainment was provided.

•
The Open House at the Faculty was once again a pronounced success. Despite the counter-attraction of the Canadian Dental Association in Montreal, there was a goodly number of the Alumni present, including the President, Dr. G. S. Werry, and his wife. The parents and friends of the students were apparently quite appreciative of the opportunity given them to see the actual surroundings in which the students passed their undergraduate days and to meet and chat with their instructors.

It was, perhaps, significant that among the visitors were young men and women who were considering dentistry as a career, and who were endeavouring to learn as much as possible about the course and about the profession. And then there were the grads who seemed to be thoroughly enjoyed roaming around their one-time haunts and noting changes made since their day. All in all, the Open House was apparently a satisfying termination to a most enjoyable Home Coming Weekend as the result of the co-operative effort of the Students, the Alumni, the R.C.D.S. and the Faculty.

C. C. R.

•
The Dental Alumni Association of the University of Toronto requires financial support from the graduates from time to time for a greater measure of student aid for Scholarships provided annually to the two most deserving students of the first year of Dentistry, and an appeal is being made at the present time for support from every graduate to assist in this educational fund.

The interest of the graduates will determine the destiny of this student aid, and your contributions are tax exempt.

Saskatchewan

The executive of the **Saskatchewan Dental Association** in contributing to the education of the profession, recently sponsored a tour of the larger centres of the province, for Dr. Wm. H. Crawford.

Dr. Crawford is Dean of the School of Dentistry of the University of Minnesota. His clinic was entitled "The Physical Properties of Materials as applied to Operative Dentistry."

He presented clinics at seven centres

and they were all well and enthusiastically attended. The Saskatchewan Association is rendering a very valuable service to the profession, so it is hoped that an ever increasing number of the Dentists will attend the clinics. More clinicians will appear during the season.

L. D. H.

Quebec

The guest speaker at the first general meeting of the **Mount Royal Dental Society** for the 1953-54 season, was Dr. B. B. Raginsky, prominent Montreal psychiatrist, who addressed the meeting on "The Emotional Stresses and Strains of Dental Practice."

The speaker prefaced his paper by quoting a formula, by which success can be explained as being a function of such factors as inner passivity, mental agility, constancy, vision, favouring external circumstances, etc. He then pointed out that to resist the ordinary frustration and pressures of a profession, one must be emotionally mature, free from feelings of inferiority and from fear of authority. He added that such pressures may tend to overflow into the professional man's family life, but that, conversely, a sense of security may be acquired or borrowed from an understanding spouse, thus contributing towards success.

To reduce the pressures prevailing upon him, the successful professional man must attain the following attributes:

- 1) Absence of physical and mental symptoms.
- 2) the ability to make decisions easily and quickly.
- 3) a satisfactory attitude towards his work.
- 4) the ability to perceive others' emotional needs.

Referring to the handling of difficult patients, the speaker pointed out that a patient's hostility may not be directed against the dentist at all, even though it may appear that way. Instead it may be aimed at the patient's own condition, caused by an unsatisfactory home life, insecurity, illness, etc. The best approach to such a patient, the speaker noted, would be "pillowing" the hostility, going along with the patient, since you cannot win in the face of such circumstances. Dr. Raginsky added that empathy, rather than sympathy, characterizes the correct approach to a patient. Questioned on the subject of Hypnosis in Dentistry the speaker declared, that it does not seem desirable to use such a complicated psychological method just

to allay a few minutes' pain or fear, since there are other, less dangerous and equally satisfactory means to obtain analgesia. Hypnosis, unless in the hands of a qualified psychiatrist, may bring out a psychological "storm", which may cause permanent harm to the patient, and end in a lawsuit against the dentist.

C. G. B.

Dr. A. D. Richardson and Dr. George Dundass were the clinicians at the November meeting of the **Montreal Endodontia Society** held in the Dental Clinic of the University of Montreal. Prior to the demonstrations, Dr. George Zimmerman, president, presented three new members to the society; they were: Dr. H. Israel, Dr. Sydney Hornstein, and Dr. George Dundass.

The evening's presentation consisted of a demonstration of filling an anterior tooth using gutta percha, by Dr. Richardson; and a demonstration of filling a two-canal bicuspid using silver points, by Dr. Dundass. Whilst the clinicians were demonstrating, Dr. Louis Rosen acted as commentator. Whilst x-rays were being developed, discussions took place regarding the difficulty of inserting silver points exactly to the apex of a tooth, or exactly to the point predetermined by the use of files. Amongst the reasons given for this difficulty were — silver points are never exactly the same size as the similarly numbered file; and files are spear shaped, whilst the silver points have a blunt end.

Following the completion of the demonstrations, the president thanked not only the speakers, but also Dr. Dorion for assisting in taking the x-rays, and Dr. Tremblay under whose guidance the cases had been treated so that they could be completed by the clinicians that evening.

R. F. H.

Dr. Valmore Allary was elected president of the Dental Society of Three Rivers and surrounding district at a recent meeting.

Other officers elected included Dr. A. Baribeau, Three Rivers, and Dr. Marius Crête, Shawinigan—vice presidents; Dr. P. Cabana, Three Rivers—secretary; Dr. Yves Dufresne, Three Rivers—treasurer; and Dr. J. J. Rinfret, Louiseville, Dr. Richard Poirier, Nicolet, Dr. Gilles Ricard, Grand'Mere, and Dr. M. Ringuet, La Tuque—directors.

Regional governors chosen were Dr. Conrad Godin, Three Rivers, Dr. Louis Lacoursiere, Shawinigan, and Dr. J. Dansereau, Drummondville. Other directors

elected included Drs. Fernand Veaudoin, L. Bourget, Jean Bruno, Rosaire Cloutier, Vincent Dontigny, Gabriel Gascon, F. X. Lacoursiere, Paul Lacoursiere, Real La-

mothe, August Massicotte, Rene Millette, Albert Trepanier, and Jules Carignan, all of Three Rivers, and Drs. Jacques Dolbec and Pierre Marchan of Shawinigan.

General News



Photo—ABC Pictures

At the Dinner and Convocation of the Canadian Section of the International College of Dentists held in Montreal on October 17 the honorary degrees F.I.C.D. were conferred on the above. From left to right: Dr. W. C. Bushell of Montreal, Dr. L. M. Grose, Dr. W. J. Ross and Dr. E. A. White, all of Toronto, Dr. J. P. McGuigan of Halifax and Dr. Gustave Ratté of Quebec City. Dr. J. F. Edgecombe, president of the Canadian Section, is making the presentations of Certificates and Keys of the College.

At the Montreal Meeting of the Canadian Section, International College of Dentists, the Master Degree was conferred on Dr. Harry M. Garvin, F.I.C.D., in recognition of his exceptional contributions to the Dental Profession. In conferring this degree, President Dr. J. F. Edgecombe said that on account of Dr. Garvin's personal character and influence he has made a great contribution to Canadian Dentistry and Dental Literature. Dr. Garvin has the distinction of receiving the first Master degree conferred on a Fellow of the Canadian Section.

As a result of combined discussions at the annual meeting of the New Brunswick and Prince Edward Island branch of the Canadian Public Health Association, a Committee has been set up to study the possibility of having members of voluntary health organizations on local boards of health.

Members of the Committee are Dr. S. Langstroth, Director of Public Health, Dr. R. D. Landry, District Medical Health Officer for Albert, Kent, Westmoreland and Northumberland counties, A. J. Cameron, Provincial Sanitary Engineer, Miss Muriel E. Hunter, Director of Pub-



Photo—David Bier

Dr. Arthur Walsh and Dr. Ernest Charron receiving their Honorary Memberships from Dr. Gustave Ratté, President of the Canadian Dental Association.

lic Health Nursing, Emily Le Blanc, Campbellton, and Dr. A. M. Clark, Assistant Chief Medical Officer and Director of Public Health Planning for New Brunswick.

To improve health conditions in the home, members of the discussion panel suggested that organization of all community health activities under a community health council would help.

It was felt that regional schools in the province had served to provide a better environment, but that not enough has been done for smaller schools where younger pupils attended.

Fluoridation of public water supplies was defeated in a referendum in Cincinnati Nov. 3. The vote was 55,904 for the measure and 76,612 against. Defeat of the measure was attributed in large part to charges of a local news commentator who spearheaded the campaign of opposition. Opponents used such ridiculous

charges that fluoridation, among other things, was "part of a communist plot to poison the American people." Immediately following the referendum, the *Cincinnati Enquirer* and *Cincinnati Post* declared editorially that they would continue their campaign in favour of the measure. The Crusade for Dental Health, an organization of dentists, physicians and civic leaders who led the drive for the program, scheduled a meeting for Nov. 16 to decide on their next course. In Columbus, Ohio, for the annual meeting of the Ohio State Dental Association, Dr. Leslie M. Fitzgerald, A.D.A. president, referring to the Cincinnati action on fluoridation, said:

"When a scientific health measure becomes a political issue, heat takes precedence over light and the only losers are the small children of the community and the future generations who are thus deprived of the dental health benefits of this proven procedure."

Dr. J. Menzies Campbell

Recent correspondence from Scotland has brought us the regrettable news that Dr. J. Menzies Campbell has retired from practice and is leaving 14 Buckingham Terrace, because of continued ill-health and the recent illness of Mrs. Campbell. The news that they are leaving their old home will bring a sense of nostalgia to all those Canadians who have had the privilege of visiting there, and receiving warm hospitality. It will, however, always be a great pleasure for them to welcome Overseas visitors at their new home, 70 Great George Street, Glasgow, W.2.

Lack of space precludes full elaboration of his contributions to Dentistry in the past forty years, but the highlights well deserve to be noted. He was born on June 9th, 1887, and was educated at George Watson's College, Edinburgh (founded 1741), which had the unique distinction of having had five of its former pupils as members of the British Cabinet during the First World War. He received his Licentiate in Dental Surgery from the Royal Faculty of Physicians and Surgeons of Glasgow in 1911, and the following year received the degree of Doctor of Dental Surgery (cum laude) from the University of Toronto, being the first British Graduate from a Canadian Dental College. In 1918 he was elected a Fellow of the Royal Society of Edinburgh, which at that time had only two dental Fellows. During the First World War he was Honorary Dental Surgeon to Woodside and Springburn Red Cross Hospitals, both of which were scheduled first line.

He delivered the first radio talk in Britain on Oral Hygiene on April 13th, 1923; and, from 1926 to 1939, innumerable talks on the same subject, to lay audiences under the auspices of the Dental Board of the United Kingdom. In 1929 he published "Those Teeth of



Yours: A Popular Guide to Better Teeth," which was followed two years later by a revised and enlarged edition. He is a Fellow of the Royal Society of Medicine (London); and a Member of the Council (1931-1934), and a Vice-President (1950-1953) of its section on Odontology. He was President of the West of Scotland Branch of the British Dental Association (1938-1929); and was President of the Odonto-Chirurgical Society of Scotland (1939-1945.) He is a founder-member of the Scottish Society of the History of Medicine and a Member of Council (1950-1953), and is a Fellow of the International College of Dentists. He is an Honorary Member of the Pierre Fauchard Academy and of La Société Française de l'Histoire de l'Art Dentaire. In May 1950 he delivered by invitation at Edinburgh University the first lecture devoted exclusively to the History of Dentistry at any Scottish University.

For many years he has served as Empire Correspondent for the Journal of the Canadian Dental Association and as British Correspondent for Dental Items of Interest. He also compiled and

published (London, 1949) "A Dental Bibliography, British and American, 1682-1880." This fine work was meticulously chronicled, and has received international acclaim. In addition he has contributed almost a hundred manuscripts to dental literature, most of them historical, and all of them impeccable in style and bearing the Menzies Campbell hallmark of veracity. Besides his contributions to dental history, he has for many years been an assiduous collector of (pre-1850) dental books, instruments, prints, advertisements, etc. His invaluable collection contains many irreplaceable items which include (with Congress certificate protecting the Title) the original manuscript of Eleazer Gidney's book, "A Treatise on the Structure, Diseases and Management of the Human Teeth," published in 1824, and also Gidney's certificate of membership of the American Society of Dental Surgeons, signed by Chapin A. Harris and dated September 28th, 1840.

When the National Health Service was inaugurated in Britain, he straightway rejected it on principle and resolutely remained outside the scheme, and wrote to his patients as follows:

14 Buckingham Terrace,
Glasgow, W.2, July 5, 1948

To My Patients:

In order to clarify my position with my patients, I should like to state that I am not participating in the new National Health Service.

Instead, I shall continue to conduct my Dental practice entirely on a personal contract basis, thus maintaining the pleasant professional relationships, which have, hitherto, existed between my patients and me.

I am, fundamentally, opposed to being compelled to submit the details of treatment, which I may recommend (and which my patients may desire), to any State-appointed board for approval or rejection: a procedure necessarily entailing considerable irritating delays.

Yours faithfully,
J. Menzies Campbell.

In recognition of outstanding service

to his profession, his Toronto colleagues recently proposed his name as a worthy recipient of the degree of Doctor of Laws (*honouris causa*.) The matter was duly considered and approved by the Senate of the University of Toronto, and Dr. Menzies Campbell was invited to accept this honour at the June Convocation in 1952, but unfortunately it was not to be. To receive the degree it was necessary for him to come to Toronto to have it conferred, but his health was such that it was impossible for him to travel. Like Tantalus of old, the proffered fruit receded as he sought to embrace it, and the reviving waters withdrew as he sought to drink. The degree could not be conferred.

His Toronto confrères share with him the keen disappointment resulting from his denouement and regret that it should have happened. Some comfort may be derived from the fact that he has been weighed in the balance by his peers and found worthy, although there is chagrin that the proffered degree could not become a "fait accompli."

Dr. and Mrs. Menzies Campbell take with them from their old home the heartfelt good wishes of their Canadian friends, and the hope that retirement may bring them both health and comfort. Eventide, too, brings gifts with gentle hands—and may it bring to them the glory of the sunset, the quiet of the evening and the serenity and peace of the evening star. Few men are by intellect and background as well fitted as he is to "Sit by the fire and lay hold on the poles of the earth." Freed from the drudgery of practice, may his early dental collections prosper and may we still derive pleasure from an even fuller flowering of his mind!

We wish to thank Dr. Menzies Campbell for his services to our Journal, and hope that he may continue to act in the same capacity for many years to come.

J. H. Johnson,
230 College Street, Toronto, Ont.

Dentists In The Van

A number of the professions have long been under fire for erecting barriers, in the form of exorbitant fees or special examination requirements, against practice in provinces other than the one in which the practitioner became qualified. The dental profession for some years has been one of the least offenders, and it has now undertaken to eliminate the last of the artificial provincial boundaries for its practitioners. This excellent example should be followed by others.

The mechanics of its move are straightforward. To replace the former Dental Council of Canada, it has established the National Dental Examining Board of Canada. This body will be responsible for setting all-inclusive examinations in the dental colleges of all provinces, so that a student successful in one province may practise in any other without having to write a new set of provincial examinations.

The old council's examinations were intended to have the same effect, but neither British Columbia nor Quebec would recognize them. The agreement of these provinces to the new arrangement was secured, however, and it was thus possible for the Canadian Dental Association to provide at its 1953 convention for the elimination of the remaining barriers. In Alberta for the past two or three years, it should be noted, there have been no examinations for properly qualified dentists from other provinces to hurdle.

Further to the credit of the dentists, it may be noted that, once convinced by careful study of the merits of fluoridation for the prevention of tooth decay in children, they have not hesitated to endorse and to urge it, although its widespread use is certain to reduce the demand for their services. Their profession is exhibiting an enlightened sense of responsibility for the public welfare.

*Reprinted from the Edmonton Journal,
November 30, 1953.*

The Dental profession as a whole feel it a privilege to remember those who gave their lives in the two world wars within our memory, and at the Memorial Services held at Hart House on November 11th, a wreath was placed by the Dental Alumni Association on behalf of all Dental Graduates.

"They Died That We Might Live"

The Dental Alumni has again donated two scholarships to the two most deserving students of the Predental Year, who were recommended by the council of the Dental Faculty for the Session 1953-1954.

The names of the two winners were Dean I. Murdy, from Emsdale Ontario, and Douglas B. Thurston of Flesherton. Mr. Murdy attended Burks Falls High School, and entered the Ontario Veterinary College in Session 1951-1952, but withdrew in February 1952. He then applied for and was admitted to our Predental Year in Session 1952-1953. He ranked 40 in a class of 73 in that year. Mr. Thurston attended High School in Flesherton and Normal School in Toronto, afterwards teaching Public School from 1950-52. He was admitted to our Predental Year in Session 1952-1953, and ranked 18 in a class of 73.

Again this year the Dental Alumni Association contributed to the Students to assist them with their float for the Homecoming Saturday parade, and we take much pride in the fact that for the second time in successive years they have taken first prize, and they certainly are to be commended for their originality.

At the Annual Golf Tournament, held at St. Andrew's Golf Club in October by the Students of the Faculty, there were about 150 in attendance. Dr. R. "Sid" Wollatt '09 was the Master of Ceremonies at the banquet which followed, and prizes were presented to the winners. Between 25 and 50 of these prizes were donated by the Dental Alumni Association, which is one of the projects in Student and Alumni relationships. J.E.T.

In Memoriam

George S. Cameron — Dr. George S. Cameron, Athlete, Dentist, Soldier, Dental Organizer, Entertainer and above all a sincere friend, died in his 74th year, on November 19th, 1953.

Born in Montreal, son of the late Allan Cameron, he received his early education at the Montreal High School and entered

the Medical Faculty of the University of Bishop's College, where he graduated in Dentistry in 1903.

In 1914, in recognition of services which he had rendered as Professor of Prosthetic Dentistry, he was granted the Degree of Doctor of Dental Surgery at McGill University.

Early in 1915, he enlisted with the 6th Field Ambulance and was awarded the title of Honorary Lieutenant. He served

with his unit overseas for nearly a year without pay before the Canadian Army Dental Corps was organized. He was then transferred, promoted to the rank of Major, and served until the end of the war in 1918.

Major Cameron was very active in dental affairs in the Province and served several terms as Governor of the Board of the College of Dental Surgeons. He was also a Past President of the Montreal Dental Club.

As one of the organizers of the Montreal Fall Clinic, he performed the duties as its manager from its inception, until he was forced to relinquish the post in 1933, due to an accident. As a matter of fact, one might say, it was mainly due to his hard work and organizing abilities that the Clinic meetings proved a success from the start.

Shortly after graduation, he took what was supposed to be a short trip to Europe. While there someone discovered that he had an excellent voice. He was induced to stay in Italy, where he studied voice and sang with various opera companies, for nearly a year. On his return home, he was, needless to say, in much demand as an entertainer at dental meetings and other groups.

When he resumed practice, he became associated with the late Doctor Peter Brown. This association developed into a very fine and lasting friendship.

As an athlete, he played hockey, lacrosse and football for the Montreal Amateur Athletic Association, and his opponents always knew when he was on the line up.

For many years he was a member of the Country Club and the Kanawaki Golf Club and he became quite proficient at the game.

He retired from active practice in 1944, due to failing health. He was an Honorary member of the College of Dental Surgeons of the Province of Quebec and of the Montreal Dental Club and also a Life member of the Montreal Amateur Athletic Association.

Surviving Major Cameron, are his widow, the former Ann Elizabeth Poyser, his daughter, Miss Ann Elizabeth Cameron and his son, Dr. Archibald Ferguson Cameron. He leaves as well a host of friends, who will long remember, not only his good deeds but also his very lovable and jolly character.

•
Origene Pouliot — Dr. Origene Pouliot of Ste. Hyacinthe, P.Q., died on November 19th, 1953, following a lengthy illness. He was 56 years of age.

Born in Ste. Hyacinthe, he received his early education at the Seminary of St. Hyacinthe and Seminary of St. Charles Borromee, and he studied dentistry at the University of Montreal and Forsyth Dental Clinic in Boston.

Dr. Pouliot practised for 20 years in St. Hyacinthe, retiring seven years ago due to ill health.

He is survived by his wife, the former Lucienne Letourneau.

•
Daniel Lauchlin MacDonald — Dr. Daniel L. MacDonald of Dartmouth, N.S., died suddenly on Saturday, 14th November, at his summer home in Pictou Landing.

A native of Antigonish, he served in the Dental Corps in World War II. He was a member of the Knights of Columbus, and the Holy Name Society.

Dr. MacDonald was an executive member of the N.S. Highland Society, and was known for his interest in Scottish culture in the province.

He is survived by his widow, Elizabeth Marion; one brother, Angus R. MacDonald of Antigonish; and six sisters, Mary Agnes; Mrs. David Belland; Mary Annette; Mrs. David Stevenson; Mrs. Gerald Murphy and Mrs. Donald MacDonald.

•
William Jameson Curry — Dr. William J. Curry passed away November 6, 1953, in Vancouver, B.C. He was 87 years of age and had been in active practice until four years ago when he retired. He graduated from Boston Dental College in 1889 and began practice in British Columbia in 1891.

He is survived by his wife, Annie E., and also by a son, Dr. W. J. Curry, Jr. of Gibsons, B.C.

•
Robert Duncan Sloane — Dr. Robert Duncan Sloane of Leamington, Ontario, died on Tuesday, October 20th, 1953. He was 75 years of age.

Dr. Sloane was born in Melancthon Twp., and received his early education in Orangeville. He graduated from the Royal College of Dental Surgeons in 1909, and practised in Leamington since that time.

Dr. Sloane was a member of the Presbyterian church.

He was keenly interested in sport, and was a founder-member of the Leamington Golf Club. Dr. Sloane was also closely associated with the Jack Miner Bird Sanctuary and was an authority on wild bird life.

He is survived by his sister, Miss M. C. Sloane, of Shelburne.

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1954	St. Andrews By The Sea, N.B.	September 5th - 8th
1955	Toronto, Ontario	May 15th - 18th
1956	Banff, Alberta	June 3rd - 6th

Future Events

Date	Function	Location	Officer	Address
Jan. 14, 1954	Academy	Toronto	Dr. J. B. King	1414 Danforth Ave. Toronto Ont.
Jan. 22	Public Health Workshop	New York City	Dr. Alfred J. Asgis	c/o Hotel Statler, N.Y.
Jan. 26	Alpha Omega Lectureship	Toronto	Dr. Harry Hellen	1692 Jane St., Toronto 15.
Feb. 3-6	Convention Somata Prosthetics	Chicago	Dr. A. C. Fonder	217 Birkhead Dr., San Antonio, Texas
Feb. 11	Academy	Toronto	Dr. J. B. King	1414 Danforth Ave. Toronto Ont.
March 11	Academy	Toronto	Dr. J. B. King	1414 Danforth Ave.
March 14-17	Clinic — Dist. of Columbia Dent. Soc.	Washington D.C.		
March 19-20	Convention of B.C. Dent. Assoc.	Victoria	Dr. M. J. Dohan	602 Scollard Bldg., 1207 Douglas St., Victoria
May 15	Meeting Canadian Society Dent. for Children	Toronto	Dr. D. L. Rife	3014 Bathurst St.
May 16-19	Convention—Ontario Dental Association	Toronto	Miss D. Jutton	234 St. George St.
June 1-5	Pacific Coast Dental Conference	Banff	Dr H. Baden- Powell	308 Greyhound Bldg. Calgary, Alta.
Sept. 5-8	Canadian Dental Assoc. & New Brunswick Dental Society Convention	St. Andrews- By-the Sea	Dr. S. K. Wetmore	147 Germain St. St. John, N.B.

Short Graduate Courses

Date	Course	Location	Address
Jan. 18-22	Periodontics	Univ. of Toronto	The Dean, Faculty of Dentistry, 230 College St., Toronto.
Feb. 1-5	Occluso Rehabilitation	Temple University	Dr. L. Herman, 3223 N. Broad St., Philadelphia 40, Pa.
Feb. 15-19	Operative Dentistry	Univ. of Toronto	As above
March 1-5	Periodontal Pathology	Temple University	As above
March 8-12	Endodontics	Univ. of Toronto	As above
Apr. 5-9	Orthodontics	Univ. of Toronto	As above
Apr. 11-15	Inlay Construction	Tufts College Dental School	Dr. Irving Glickman, Tufts College Dental School, Div. of Graduate & Postgraduate Studies, 136 Harrison Ave., Boston 11, Mass.
Apr. 14-16	Clinical Occlusion	Temple University	As Above
Apr. 26-30	Periodontics	Univ. of Toronto	As Above
May 3-7	Dental Oral Surgery	Univ. of Toronto	As Above
July 12-16	Oral Pediatrics	Tufts College	As Above

Notices

University of Toronto, Faculty of Dentistry

GRADUATE COURSE IN ORTHODONTICS

Applications will be received up to March 1st for the graduate course in Orthodontics at the University of Toronto. The course commences on September 1, 1954, and continues for a period of seventeen months. Enrolment is limited to six graduates of approved dental schools. The applicants must possess satisfactory scholastic standing acceptable for enrolment for the Master of Science (Dent.) degree in the School of Graduate Studies of the University of Toronto.

For further information and application forms address all inquiries to: The Dean, Faculty of Dentistry, University of Toronto, 230 College Street, Toronto, Ontario, Canada.

Journal

DE L'ASSOCIATION DENTAIRE CANADIENNE

Rapport d'un cas de lupus*

par MARCEL B. ARCHAMBAULT, B.A., D.D.S.,
Montréal

Le lupus n'est autre que la tuberculose d'un tissu mou situé en dehors des poumons. Cette maladie se manifeste sous la forme de lésions ulcératives.

Le cas, qui nous concerne, est un lupus qui se développe en arrière du palais dur, détruisant la luette, une partie du palais mou, une partie des fosses nasales et envahissant les piliers amygdaliens antérieurs et postérieurs.

La patiente s'est présentée à notre bureau en septembre 1950: 32 ans, mariée sans enfant, sans antécédent de tuberculose dans sa famille. A ce moment, les lésions étaient en voie de guérison, grâce à de longs mois de cure et de bons soins. Malheureusement, le lupus avait fait son oeuvre et les tissus détruits laissaient une brèche béante. On ne pouvait espérer aucune régénération des tissus, comme il arrive parfois pour le tissu osseux et d'autres cellules atteintes de certaines lésions moins virulentes. Dans le cas qui nous préoccupe, la guérison permanente se manifeste par la cicatrisation et l'atrophie des tissus, amenant une obstruction

complète des voies respiratoires supérieures du larynx.

Comme la patiente ne pouvait plus respirer par le nez, elle accusait des troubles de l'ouïe et du parler. Elle consulte un laryngologiste. Ce dernier tente, à deux reprises, de pratiquer des ouvertures per-

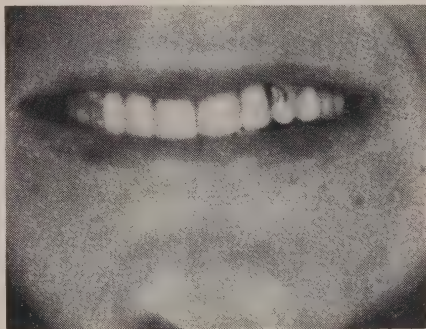


FIG. 1

manentes dans le tissu cicatriciel des fosses nasales. Chaque fois, la muqueuse se re-cicatrisa en quelques semaines.

A bout de ressources et sachant que la plastie était inutile, on songea à construire un appareil pour maintenir, durant la guérison, les ouvertures, que le chirurgien

* Photos de l'auteur

Référence: Current Therapy, Conn. 1952

Collaboration: Jacques Badeaux, M.D., et Georges D. Charbonneau, technicien



FIG. 2

se proposait de pratiquer une dernière fois.

La patiente portait déjà des prothèses complètes. (fig. 1 et 2). Nous nous proposâmes de confectionner une prothèse supérieure avec prolongements tubulaires. L'arrière-bouche montrait l'absence de l'arcade et l'atrophie des tissus adjacents (Fig. 3).

L'illustration 4 laisse voir le lavage de la muqueuse. Il faut noter que l'applicateur ne pénètre pas tellement loin pour atteindre le plafond du cul-de-sac, soit environ trente-cinq millimètres.

On prit une empreinte, à l'aide d'une substance résineuse, du palais mou et du

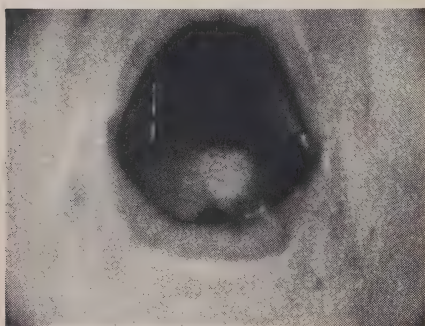


FIG. 3

maxillaire supérieur à la pression des doigts seulement, puisqu'aucun porte-empreinte ne pouvait s'adapter à la forme du maxillaire. Avec ce porte-empreinte façonné à la main, il fut possible de



FIG. 4

prendre une empreinte finale en substance hydrocolloïdale. Sur le modèle de pierre, deux petits points de cicatrisation récente apparaissent à peine de chaque côté de la ligne médiane, d'une façon asymétrique.

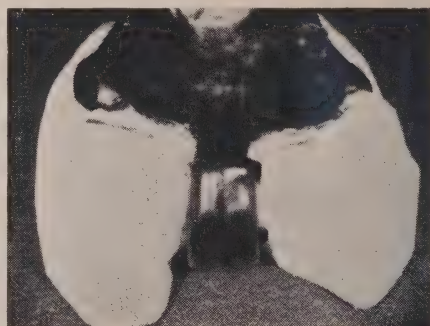


FIG. 5

Ces deux petites marques serviront de points de repère pour la confection d'une prothèse permanente dont le but est de

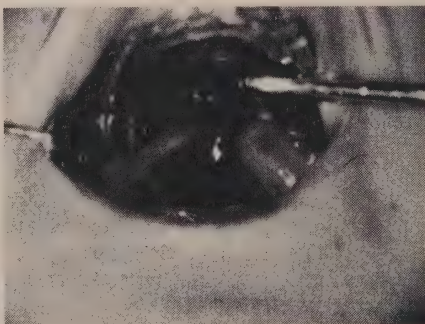


FIG. 6

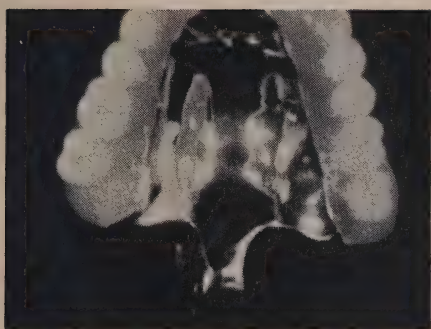


FIG. 7

maintenir ouvertes les orifices qui seront pratiqués dans la muqueuse. Le contour de la pièce s'élabore en tenant compte de l'anatomie de la région et s'étale en cire bleue avec voûte palatine et extension en forme de languette; ce prolongement est muni de deux petits tubes en forme de courbe renversée qui pénètrent à travers les deux petits points de cicatrisation dans les deux fosses nasales, de chaque côté de la cloison osseuse. Nous avons espoir que les ouvertures pratiquées à deux reprises par le même chirurgien se répéteront une troisième fois aux mêmes endroits. La Fig. 5 montre le modèle de cire, qui est finalement coulé en Vitallium. Le chirurgien procède sous anesthésie locale (50% cocaïne, 50% adrénaline). Il utilise un



FIG. 8

bistouri à long manche et fait son incision en pénétrant par le nez. La pièce est mise en place séance tenante sans aucune diffi-

culté (Fig. 6). On procède une nouvelle empreinte au Plastogum, par dessus la pièce coulée. Une autre empreinte est prise pour la mandibule, l'articulation, etc. La Fig. 7 laisse voir l'aspect de la



FIG. 9

pièce coulée munie d'acrylique et des dents.

Le tout est inséré dans la cavité buccale. La Fig. 8 nous montre le sourire de la patiente après les premiers moments d'angoisse.

Après trois ans, nous pouvons affirmer un succès. La patiente porte toujours son appareil. Pour l'instant, il n'est pas question d'éliminer les tubes, mais nous espérons pouvoir le faire un jour.

La dernière photo (Fig. 9) montre les deux pièces en articulation et de profil. Nous avons placé une tige à pipe dans un des tubes, faisant comprendre à la patiente que ce pourrait bien être un des moyens pour nettoyer la pièce au besoin.

Nous sommes heureux d'avoir contribué à améliorer l'état d'une malheureuse. Non seulement, la patiente respire normalement par le nez mais son ouïe et sa phonétique se sont grandement améliorées. L'esthétique a aussi gagné. Du point de vue complexe, il n'en est pas question: la patiente est des plus heureuses.

835 est, Bd St-Joseph.

Nouvelles de l'Association

Besoins d'augmenter les facilités d'enseignement

Pour répondre aux besoins de l'avenir, on a décidé de prendre des moyens pour augmenter les facilités d'enseignement dentaire au Canada. La population s'accroît rapidement et une grande proportion des dentistes dépassent l'âge de cinquante ans. Il faut donc agrandir les écoles actuelles et en construire de nouvelles. De nos jours, les facultés ne peuvent pas former un nombre de dentistes plus considérable qu'au temps où la population se chiffrait aux deux tiers de celle d'aujourd'hui. A ce sujet, la résolution suivante a été approuvée:

"Attendu qu'il y a une pénurie de dentistes au Canada;

Attendu que les facultés dentaires ne peuvent actuellement former des dentistes en nombre suffisant pour répondre aux besoins de la population;

Attendu que ces lacunes d'enseignement ne peuvent être comblées que par le gouvernement et les autorités universitaires;

Il est résolu que l'Association prenne tous les moyens possibles pour que les facilités de l'enseignement dentaire soient augmentées pour la formation de dentistes et d'hygiénistes dentaires en vue de répondre aux besoins de la population."

La Chambre de Commerce canadienne s'oppose à l'assurance-santé obligatoire

La déclaration suivante a été approuvée à la 24^e réunion annuelle de la Chambre de commerce canadienne, tenue à Edmonton, Alberta, du 14 au 17 septembre 1953.

Services nationaux de santé et services de santé

"Il faut tendre vers les standards les plus élevés de la santé. Un peuple en santé représente une richesse incalculable pour une nation.

Le problème national de la santé renferme trois facteurs: (1) la prévention (2) les traitements et la réhabilitation (3) le soin des chroniques et des incurables.

La prévention des maladies et des accidents en est la partie la plus importante. Cette phase du problème doit être réglée par un programme accéléré d'éducation du public sur les questions de santé et de sécurité.

Les services et les facilités médicales doivent être constamment augmentés au Canada, le nombre des membres du personnel médical augmenté pour que le peuple canadien reçoive l'attention médicale nécessaire (services hospitaliers y compris).

La santé d'une nation ne repose pas seulement sur les traitements médicaux mais aussi sur une alimentation et un logement salubres. Le programme actuel de bien-être social contribue à ces exigences; en considérant les entreprises gouvernementales en faveur des services de santé, il ne faut pas oublier l'assistance considérable que donnent les pensions de vieillesse, la sécurité de la vieillesse et les allocations familiales, qui représentent une remise substantielle des argents déboursés par le peuple canadien.

La Chambre croit que, dans une société libre, il appartient à l'individu de supporter le coût des soins médicaux à sa famille et à lui-même. La Chambre approuve la coutume qu'ont certains employeurs d'aider leurs employés à défrayer les dépenses occasionnées par la maladie. La Chambre est édifiée par le progrès et l'expansion rapides des plans d'assurances collectives libres pour la maladie. Ces plans devraient être encouragés par la contribution des employeurs dans certains cas particuliers.

L'aide gouvernementale est indispensable au développement des facilités adéquates de santé au Canada. La Chambre approuve les octrois des gouvernements fédéral et provinciaux en faveur des services de santé et croit que ces octrois devraient être aussi généreux que possible; il ne faut pas oublier que les revenus du gouvernement lui viennent du peuple et que les sommes votées pour le bien-être social sont déjà substantielles et sujettes à augmentation. La Chambre croit que les contributions apportées par le gouvernement pour aider des organi-

sations privées à prendre soin des malades indigents sont insuffisantes et parfois ridicules et que, par conséquent, elle devraient être augmentées.

La Chambre s'oppose à toute forme d'assurance-santé obligatoire ou à la médecine d'état. Si on mettait en force ce service de santé qu'on se plaît à qualifier de gratuit, on verrait une recrudescence exagérée de demandes pour ce service. Quelques-unes de ces demandes seraient fondées, mais d'autres viendraient de personnes souffrant de maladies imaginaires ou de maladies sans conséquences, qui ne nécessitent pas ordinairement de soins médicaux. On s'entend pour dire qu'il serait impossible de prévoir le coût probable d'un plan national de santé obligatoire et général; mais on peut dire que le coût d'un tel plan dépasserait la somme des argents dépensés aujourd'hui pour la santé au Canada.

La Chambre croit que l'expansion graduelle et rapide des plans d'assurance libre pour la maladie fera que le peuple canadien deviendra protégé contre les déboursés nécessités par la maladie sans que sa liberté soit sacrifiée. Les indigents présentent un cas spécial. La Chambre est d'avis que le standard élevé actuel des traitements médicaux couvrira plus tard la majorité de cette classe, sans nuire aux services de santé que le gouvernement assiste sur une base libre."

Le Congrès canadien du Travail se prononce sur la question d'assurance-santé

La Gazette du Travail, en rapportant la réunion annuelle du Congrès canadien du Travail, écrit les lignes suivantes:

"Le C.C.T. persiste à réclamer un plan national d'assurance-santé qui donnera à tous les Canadiens des traitements médicaux, chirurgicaux, optiques, dentaires et hospitaliers. L'assemblée générale a adopté une résolution suggérant qu'un plan du genre soit administré comme l'est l'assurance-chomage.

Le Comité des Résolutions a rejeté une résolution demandant, en plus, une conférence fédéro-provinciale pour en venir à une entente sur la question; ce Comité a de

plus écarté une motion voulant que le plan canadien suive dans ses grandes lignes le plan anglais; enfin, une autre résolution demandant d'établir le plan le plus tôt possible.

Le Comité a de plus retranché de la résolution qui a été adoptée, une clause voulant que le plan soit gratuit.

Pour expliquer l'attitude du Comité, son président, M. Harry Chappell, a déclaré:

"On n'a rien pour rien. Ce que nous désirons, c'est un plan de santé national, qui soit gratuit, c'est-à-dire financé par les revenus des impôts généraux ou qui soit contributoire."

Un délégué, qui approuvait cette attitude, ajouta que les citoyens payaient déjà le coût d'un plan de santé, qu'ils le veulent ou non, en soldant les honoraires des médecins et des hôpitaux.

Un plan semblable répartira les déboursés sur tous les citoyens, de façon à ce qu'un individu, qui n'a pas l'argent disponible pourra quand même se faire traiter, quand il en a besoin.

A sa réunion du mois d'août, le T.C.C. avait demandé au gouvernement de mettre sur pied une organisation de santé subventionnée et contributoire; cette demande ressemble beaucoup à celle du C.C.T."

Membres sympathisants de la Fédération dentaire internationale

Comme l'Association dentaire canadienne est membre de la Fédération dentaire internationale, ses membres peuvent devenir membres sympathisants de la F.D.I. Ce titre de membre sympathisant confère à son détenteur un abonnement au Journal de la Fédération, qui relate les activités dentaires du monde entier; de plus, ce membre reçoit le bottin des nouvelles de la F.D.I. La cotisation des membres sympathisants est de \$ 9.00 par année. L'année officielle de la F.D.I. commence le 1er janvier.

Un certain nombre de Canadiens font déjà partie de la F.D.I. et il serait à souhaiter que d'autres noms s'ajoutent à la liste. Les chèques doivent être faits payables à Don W. Gullett, trésorier national, 234 rue St-Georges, Toronto, Ont.

Quatre dentistes, Membres du Parlement

La vingt-deuxième session du Parlement du Canada s'est ouverte le 12 novembre 1953, comptant parmi ses membres quatre diplômés de facultés dentaires. D'après nous, c'est le plus fort contingent de dentistes qui n'ait jamais siégé à Ottawa.

W. M. BUCHANAN, diplômé du Baltimore College of Dental Surgery en 1923, a exercé depuis ce temps à North Sydney N.-E. Il a été élu en août dernier pour représenter le comté de Cap Breton-Nord et Victoria.

J. L. MACDOUGALL, diplômé du Royal College of Dental Surgeons de Toronto, en 1923. Il a pratiqué, par la suite, dans l'ouest du Canada durant quelques années et a pris une part préminente dans la politique durant longtemps. Il représente le district électoral de Vancouver-Burrard et réside à Vancouver. Il commence son troisième terme à la Chambre.

H. P. MANG, diplômé du Royal College of Dental Surgeons de Toronto, en 1923. Après avoir terminé ses études, il s'établit dans l'ouest du pays et laissa bientôt la dentisterie pour l'agriculture. Il fut élu l'été dernier pour la première fois à la Chambre des Communes et représente la circonscription de Qu'Appelle; il demeure à Edenwold, Sask.

W. A. POMMER, diplômé en 1920 du Royal College of Dental Surgeons de Toronto et a pratiqué à Winnipeg, Man. Il est le député de Lisgar, Man. et demeure à Manitou, Man.

Il est à noter que ces quatre députés-dentistes appartiennent tous au parti libéral et que trois d'entre eux ont reçu leur parchemin dentaire en 1923.

Données sur la fluoruration

On est à publier une brochure intitulée "Données sur la fluoruration". Le comité des Recherches de l'A.D.C. a préparé cette brochure en y insérant des statistiques contrôlées sur la fluoruration des eaux des aqueducs. On peut s'en procurer une copie gratuitement en écrivant à l'Association dentaire canadienne, 234 rue

St. Georges Toronto. Le secrétariat de l'A.D.C. fera parvenir les copies aussitôt parues.

Modification du Journal

La livraison de janvier est parue avec une nouvelle couverture. Le nouveau dessin a été approuvé à une réunion du Comité de Publication, le 10 novembre 1953. Les pages intérieures ont aussi subi des changements notables. Un spécialiste en typographie avait été chargé d'apporter ces modifications au Journal de l'Association.

Acquisitions récentes de la bibliothèque

BEUBE, F. E.—Periodontology; diagnosis and treatment. 1953. 736 p. illus.

BISSET, K. A.—The cytology and life-history of bacteria. 1954. 135 p. illus.

FERGUSON, J. K. W. and LUCAS, G. H. W.—Henderson's materia medica. 1951. 314 p.

FINN, H. R. B., LIDDLELOW, K. P., and GIMSON, A. P.—Clinical dental prosthetics. 1953. 502 p. illus.

GIBSON, H. L.—The photography of patients including discussions of basic photographic and optical principles. 1952. 118 p. illus.

HOGBOOM, F. E.—Practical pedodontia or juvenile operative dentistry and public Health dentistry. 1953. 642 p. illus.

MONICA, W. S.—Woodie and the Jolly Dentist; battle the wicked Lactophilia. 1953. 20 p. illus.

(THE) NATIONAL VITAMIN FOUNDATION, INC. Recent advances in nutrition research, with emphasis on the newer B vitamins. Nutrition Symposium Series, Number 5, 1952. 129 p.

PEARSE, A. G. E.—Histochemistry, theoretical and applied. 1953. 530 p. illus.

PERKINS, A. E.—Handbook of dental surgery and pathology. 1949. 430 p.

PINDBORG, J. J.—Gingivitis in military personnel with special reference to ulceromembranous gingivitis. Reprinted from Odontologisk Tidskrift. Vol. 60; 407-499. 1951. illus.

ROUNDS, F. W. and ROUNDS, C. E.—Principles and techniques of exodontia. 1953. 407 p. illus.

TAUBE, M.—Studies in coordinate indexing 1953. 110 p.

Plan d'assurance de l'A.D.C.

Hâtons-nous de dissiper un malentendu au sujet de ce plan d'assurance. Ce plan d'assurance collective destiné aux dentistes canadiens n'engage pas en aucune manière l'Association dentaire canadienne. Ce plan d'assurance est la propriété et il est administré par une compagnie privée, la Professional and Industrial Pensions Limited, dont le siège social est à Brockville, Ontario. Quel rôle joue donc l'A.D.C. dans toute cette affaire d'assurance? —Pour répondre à cette question, il faut en faire l'historique. Depuis longtemps, des dentistes du Canada demandaient à leur association nationale d'étudier et de leur proposer un plan d'assurance-groupe, qui les protégerait contre tous les risques inhérents à l'exercice de leur profession: retraite, mortalité, maladies, accidents, hypothèques, instruction des enfants, etc.

Cette demande de la part des dentistes était toute normale. Voici un groupe d'individus exerçant la même occupation, soumis aux mêmes risques, qui veulent unir leurs efforts pour obtenir la même protection pour des déboursés moindres. En un mot, les dentistes voulaient bénéficier des avantages de l'assurance-groupe.

L'Association demande donc à des compagnies canadiennes de lui soumettre des plans d'assurance collective contre tous risques. Comme l'A.D.C. n'a aucune compétence en matière d'assurance, elle demande à une firme indépendante d'actuaire d'étudier ces propositions et de lui faire rapport.

Quelques compagnies d'assurances proposent des plans, qui sont tous rejetés par les actuaire, comme incomplets ou trop dispendieux.

L'Association désespère de trouver une formule, qui satisfasse aux exigences!

Enfin quelques compagnies anglaises s'entendent pour fonder une succursale au Canada et cette filiale canadienne soumet une formule, qui après avoir été amendée—il va sans dire—reçoit l'approbation des actuaire et conséquemment celle de l'Association dentaire canadienne. Le plan est donc proposé aux dentistes et l'Association accorde son patronage. On voit ici le rôle qu'y joue l'Association; elle n'y est pas intéressée financièrement et n'assume aucune responsabilité.

Maintenant, étudions, dans ses grandes lignes, le plan, qui fonctionne environ depuis un an et demi. Il groupe dans une seule police tous les risques mentionnés au début de cet article.

Le dentiste, au lieu de transiger avec plusieurs compagnies ne s'adresse qu'à une seule pour parer à tous ses risques personnels.

Les taux de cette assurance coûtent environ vingt-cinq pour cent meilleur marché que ceux de toute autre assurance du genre en Amérique. Cette constatation peut surprendre. Elle s'explique facilement par le fait que cette compagnie n'a pas les dépenses d'administration d'une autre compagnie ordinaire; elle n'a pas d'agents, pas de succursales, pas de frais de publicité, etc.

Ce plan a été conçu pour des dentistes; donc, il élimine les discussions, qui peuvent survenir quand un dentiste, par exemple, réclame une indemnité pour l'abandon forcé de son travail. S'il est abonné à une assurance, qui groupe des personnes de toutes occupations, on peut lui apporter certaines objections. Avec ce plan de l'A.D.C., non.

Enfin, il y a une foule d'autres motifs, qui militent en faveur de cette formule.

Pour confirmer son opinion, l'A.D.C. a, de nouveau, à l'été de 1953, fait étudier le plan dans toutes ses modalités par une autre compagnie indépendante d'actuaire, la Cie Wyatt, des Etats-Unis. Ces actuaires, qui jouissent d'une excellente réputation dans le monde entier, ont pu approfondir le plan en *fonctionnement*, puisqu'il existe depuis environ deux ans.

Le rapport de cette compagnie d'actuariat renchérit sur la première étude et déclare que le plan offre tellement d'avantages que l'Association devrait mettre tout en oeuvre pour en faire bénéficier ses membres.

On a des preuves de son excellence, en mentionnant que le montant souscrit depuis sa mise en force représente une somme incomparable à toutes celles souscrites par aucune compagnie dans la même période de temps pour ce genre d'assurance.

Et les autres compagnies se sentent tellement "enfoncées" qu'elles entreprennent actuellement une contre-offensive chez les dentistes, en utilisant parfois des méthodes qui se font fi de la justice.

Pour s'en convaincre, on n'a qu'à lire les Délibérations 1953 de l'A.D.C., qui vous arriveront prochainement.

GERARD DE MONTIGNY

Le facteur psychique en médecine dentaire

Nous extrayons ces notes d'un travail du Prof. H. Meng de Bâle et paru dans *Psyché* No 80, 1953, p. 350.

Il faut reconnaître à vrai dire que le jeune stomatologiste se trouve assez mal préparé devant les données mentales compliquées d'un certain nombre de patients.

Or la première disposition pour un traitement efficace est une bonne relation psychique entre médecin et patient et réciproquement. Elle repose sur la confiance mutuelle.

La consommation subjective d'un traitement chirurgical, médicamenteux ou conservateur, varie selon le patient. Celui qui est en bonne santé, le malade organique, le névrosé, enfants, hommes ou femmes réagissent parfois selon les circonstances, leur manière de vivre ou leur tempérament, d'une façon paradoxale sur un traitement objectivement correct du stomatologiste. Celui-ci réussira le mieux à comprendre ces réactions subjectives s'il est capable de pénétrer l'enceinte de la vie intérieure du patient, surtout que beaucoup de malades sont incapables d'exprimer ou de définir nettement la sensation, le degré ou le genre de douleur qu'ils sentent, ni la relation de cette dernière par rapport à la chaleur, le froid ou une agitation physique. Le stomatologiste lui-même doit être psychiquement équilibré afin de donner l'impression d'une personnalité ferme, source d'une émanation psychique saine. Ceci est avant tout nécessaire, parce qu'un patient psychiquement instable est facilement touché par la névrose au contact avec le stomatologiste.

Comme le chirurgien, ce dernier doit, en plus de sa bonne tenue technique, vraiment aimer son métier. L'intérêt pour le malade doit aller au-delà des murs de son cabinet de consultation. Le meilleur chirurgien, purement technique, qui manque de contact psychique avec son patient pendant la période qui précède l'opération ou pendant le traitement

après celle-ci, est comparable au stomatologiste qui avant et après l'opération, reste psychiquement désintéressé de son malade. Ceci vaut surtout pour les cas de porteurs de prothèses. Un patient "hystérisé" de cette catégorie chez qui tout est techniquement parlant dans le meilleur ordre, peut par suite de l'opération qui amène la pose de la prothèse, souffrir d'une sorte de névrose "traumatique". Dans ce cas il devient pour soi-même, la société et le médecin, un désastre, comparable à un opéré de l'appendice qui bien que tout soit physiologiquement et anatomiquement en ordre, ne cesse de se plaindre de bagatelles, parce qu'il n'arrive pas à s'adapter au nouvel état de choses.

Rapports avec les enfants

Quant aux enfants, le stomatologiste doit s'attendre surtout chez ceux entre 6 et 8 ans, à rencontrer des réflexes susceptibles de créer des difficultés dans le traitement dentaire.

Des connaissances sur l'éducation donnée à l'enfant, sur son entourage pourront être précieuses pour l'attitude à prendre à son égard. Quand l'enfant est mal élevé et se montre récalcitrant, ce n'est pas l'affaire du stomatologiste de le punir.

Il devra l'associer à son traitement. Les résistances principales sont des réflexes conditionnels provenant de situations antérieures et psychiquement réactivées lors de la consultation. L'expérience démontre qu'un réflexe conditionnel est le mieux éliminé par un autre réflexe conditionnel, plus tard par l'élimination d'automatismes nuisibles. Il serait inutile de punir pour triompher. De l'humour, une parole énergique, mais pas autoritaire pourront souvent être utiles. Éliminer les sources d'angoisses.

Éviter des traumas caractérisés par un choc de déception (par exemple: "ça ne fait pas mal"—et après ça fait mal quand même.)

Le petit être humain "va" aux plaisirs,

il les cherche, le plaisir d'être courageux, celui de l'approbation du stomatologiste, le plaisir matériel d'une friandise, d'un jouet prêts pour lui après l'opération.

Des faits comme celui d'associer le petit patient dans l'entreprise du traitement (en tant que destructeur du mal de dents, de la douleur), le sentiment que le stomatologiste l'aime bien et ne menace pas de le mettre à la porte, peuvent se transformer en sources de plaisir.

Celui qui n'aime pas les enfants, doit renoncer à leur traitement. Punir ne crée pas l'autorité. Et il est juste de traiter l'enfant comme s'il était déjà plus mûr qu'en réalité. Il est prouvé à quel point l'image du père ou de la mère, ressuscitée dans les rapports avec le stomatologiste, impressionne parfois l'enfant dans son attitude ultérieure vis-à-vis de l'autorité, de l'angoisse et de la douleur. Trouver ici la juste conduite est une fonction autant pédagogique que psycho-hygiénique du stomatologiste.

Le facteur décisif ne sera pas, s'il se met une fois bien en colère parce que l'enfant est mal élevé, mais comment en tant que caractère, exemple et autorité, il aide l'enfant à sortir de sa détresse d'enfant malade, ce qui forme les comportements ultérieurs aussi en dehors de son cabinet de consultation.

Le stomatologiste qui sait bien observer et qui a des connaissances psychologiques, a également son importance pour le diagnostic de la vie psychique de son patient. Dans son cabinet, il rencontre assez souvent des symptômes en voie de formation dont les origines sont au dehors. Ici il peut saisir, de façon pronostique, les conséquences d'un faux développement et il pourra après l'avoir discuté avec les parents et un psychologue, reconduire l'enfant vers un assainissement psychique.

Il pourra aussi faire le nécessaire, pour que des malades qu'il soupçonne d'une vraie maladie organique, considérée comme d'origine nerveuse, soient soumis à un examen organique approfondi.

Inversement, des troubles d'apparence organique, peuvent être en grande partie dus à un blocage psychique par inhibition.

Savoir observer et être psychologiquement expérimenté, permettent souvent de découvrir la vraie piste, conduisant au succès du traitement.

Problème des prothèses dentaires

Surtout en ce domaine, l'attitude psychique du stomatologiste (en plus de la solution purement chirurgicale ou technique), son rapport avec le malade et spécialement sa connaissance de tout ce qui concerne sa vie antérieure à l'opération, seront d'une importance qu'il ne faut pas sous-estimer. En général, les mêmes conditions valent pour la genèse des complexes d'infériorité chez les porteurs de prothèses dentaires (ou des déféctuosités de la mâchoire), que pour des individus avec des déféctuosités naturelles ou innées. On a procédé à un examen spécial de 40 personnes adultes avec des lésions graves, subies avant leur septième année. Pendant les examens on pouvait nettement constater à quel point la structure de l'entourage, surtout de la famille, influence le développement du caractère de quelqu'un qui a subi la lésion dans sa première enfance. Une analogie dans le comportement de porteurs de prothèses: la prothèse remplace l'organe ou elle cache la déféctuosité. (Ex.: oeil artificiel des borgnes.)

Il s'agit de préparer d'une façon appropriée le futur porteur de la prothèse à la nouvelle situation, et puis aussi l'aider plus tard quand il aura, malgré le bon travail technique du stomatologiste, des difficultés à s'adapter psychiquement à son "deuil" normal ou pathologique, causé par sa déféctuosité.

Ici il importe que le stomatologiste fasse en quelque sorte charge d'âmes.

Relations entre stomatologiste et patient

Il faut savoir que le patient, dans son rapport psychique avec le stomatologiste, peut revivre des relations psychiques d'antan, qui le liaient à des personnages (surtout ses parents) qui représentaient pour lui les autorités de son entourage de cette époque lointaine. Ses rapports psychiques étaient en partie positifs, en partie négatifs. Ce mélange composé d'affection et d'antipathie (ambivalence)

a des effets, dont le caractère fâcheux varie selon le degré auquel l'individu est névrosé. Il faut que le stomatologiste tienne compte de ce fait, surtout pendant les phases particulièrement douloureuses du traitement, où le patient, se sentant abandonné et à la merci du médecin, est plus enclin que jamais aux phénomènes de "transfert". D'anciennes angoisses sont ressuscitées.

Le "complexe d'endommagement" ou "complexe de castration" se manifeste le plus souvent pendant des opérations dentaires, sans que le malade s'en rende compte. Ceci est prouvé par des analyses exactes de rêves, observations de psy-

choses et par l'histoire de l'interprétation symbolique des organes du corps humain. On a constaté souvent des cas d'enfants ou d'individus, jeunes, où des réactions d'obstination, non fondées dans le conscient, mais motivées dans l'inconscient, furent activées contre la personne du stomatologiste.

Tout dépend comment le stomatologiste est "rangé" en tant que personnalité, combien d'esprit naturel, de sens commun il possède et ce qu'il sait de la nature humaine, surtout de celle du névrosé, afin de pouvoir choisir la meilleure méthode pour traiter ses patients.

Médecine et Hygiène, 15 octobre 1953

Comment Enlever un Tire-nerfs Cassé?

Résumé d'un travail présenté par A. Rachmut dans l'Information dentaire du 10 septembre 1953, p. 1164

Le bris d'un tire-nerf dans un canal pose deux problèmes:

a) Comment l'enlever?

b) Si cela n'est pas possible, que faire pour éviter au mieux des suites fâcheuses?

Les moyens préconisés sont:

1. Agrandir le canal en ovale avec une fraise à fissure, pour l'attraper avec une précelle. Inconvénient, grosse perte de substance.

2. Enrouler quelques fibres de coton sur un deuxième tire-nerfs et l'introduire dans le canal de façon à ce que les deux tire-nerfs et le coton s'enchevêtrent. Agir avec douceur pour sortir le tout et éviter d'avoir deux instruments cassés au lieu d'un.

3. Réduire le diamètre du tire-nerfs par un moyen chimique (iode ou ac. nitrique) avant d'appliquer la méthode No 2. Inconvénient: avec l'iode c'est très long, avec l'acide c'est dangereux.

4. La méthode de l'électro-aimant utilisée en ophtalmologie, vu l'étroitesse du lumen, ne peut donner d'heureux résultats.

5. L'ionophorèse qui a pour conséquence l'alésage des canaux peut être un précieux auxiliaire avant la méthode No 2.

6. L'usage de la trousse arrache-pivots. Le trépan permet d'ôter de la dentine autour du tire-nerfs que l'on extrait ensuite par les moyens sus-indiqués.

En cas d'échec dans l'extirpation, l'ionophorèse est la méthode de choix pour aseptiser la dent. L'auteur l'emploie d'autant plus volontiers, qu'il abhorre avec raison la méthode chimique et que le trépan sous n'importe quelle forme, sacrifie trop de dentine.

Si l'on ne retire pas le tire-nerfs, que peut-il arriver?

Si c'est un 3^{me} degré, donc pas de lésion apicale, on peut le laisser. Il faut simplement s'assurer que la dévitalisation est poussée assez loin pour qu'une pulpite ne puisse intervenir.

Quelques séances d'ionophorèse et l'on ferme de son mieux, avec une pâte qui durcit.

Si c'est un 4^{me} degré, on procède de la même manière en se souvenant que si l'alésage électro-chimique est suffisamment poussé, on a des chances de retirer en fin de compte, plus aisément le "corps du délit". *Médecine et Hygiène, 15 octobre 1953*

Aux Etats-Unis

Violente polémique autour de la fluoruration de l'eau

Nous avons signalé dans un précédent numéro qu'une opposition semblait se développer aux Etats-Unis contre la fluoruration de l'eau. Aux dernières nouvelles, il semble que cette opposition serait due à une campagne de presse dirigée par un journaliste bien connu outre-Atlantique et de grand talent, James Rorty, qui, dans le No du 29 juin du quotidien *The Freeman*, sous ce titre bien prometteur "La Vérité sur la fluoruration," use, pour combattre la méthode, des procédés en honneur dans une certaine presse et que nous avons bien connus en France sous l'occupation. Tel est du moins l'avis qu'exprime J. Roy Doty, Secrétaire du "Council on Dental Therapeutics" de l'American Dental Association, dans un article que publie notre grand confrère américain (août 1953) et dans lequel, après avoir rappelé que des campagnes analogues avaient été savamment orchestrées lorsque fut préconisée la chloruration de l'eau et la pasteurisation du lait, méthodes auxquelles des milliers d'enfants doivent la vie, il répond à la violente diatribe du dit journaliste relevant les points suivants:

1° C'est une ficelle de propagande bien connue que de mettre en avant un nom mal vu du grand public et susceptible de soulever l'émotion. En laissant entendre que la fluoruration était un projet du précédent administrateur de la "Federal Security," qui préconisait l'instauration d'un régime d'Assurances sociales obligatoires aux Etats-Unis, Rorty cherche à insinuer dans l'esprit du public que les deux projets marchaient de pair. Sur ce point, il suffira de rappeler que la fluoruration de l'eau a été préconisée par les quatre grandes organisations professionnelles qui ont pris la tête du mouvement d'opposition contre les projets d'assurance sanitaire obligatoire du dit personnage, à savoir: l'American Medical Association, l'American Dental Association, le Na-

tional Research Council et l'American Public Health Association.

2° Rorty s'est bien empressé de citer le rapport de George-S. Bratton paru dans "Journal of the American Water Works Association" qui formule des critiques contre la méthode, mais a soigneusement omis de faire état d'un autre article du même numéro, signé de Victor Weir, qui précisément répondait à toutes les objections soulevées par l'auteur précédent!

3° La technique du "gros mensonge" est également bien connue. Et on continue à répéter la vieille accusation que les divers facteurs ayant trait à la sécurité de la fluoruration ont été peu étudiés. En face de cette accusation, rappelons que la bibliographie établie par le Kettering Laboratory, de l'Ecole de Médecine de l'Université de Cincinnati, ne comporte pas moins de 5,000 titres de travaux traitant des effets physiologiques de fluorures! Il est permis à M. Rorty de les ignorer, mais il ne lui est pas permis d'affirmer, ce qui n'est pas vrai, que ces recherches n'existent pas. D'ailleurs, la nature elle-même s'est chargée de démontrer l'innocuité des fluorures à la concentration recommandée de un pour un million, en fournissant un immense laboratoire dans de nombreuses régions des Etats-Unis, où des millions de personnes consomment depuis de nombreuses années des eaux fluorurées à des proportions allant jusqu'à 14/1.000.000, sans que jamais des effets indésirables aient été constatés, en dehors du "mottled enamel" (émail tacheté).

4° Enfin, l'article Rort utilise un autre argument de propagande bien caractérisée: sans affirmer explicitement que la chose ait été constatée, il insinue que la consommation d'eau fluorurée est capable de provoquer toutes sortes de maux et entre autres des retards du développement mental!

Une des causes de la crainte que suscite la fluoruration de l'eau dans l'esprit de

personnes mal informées est le fait que, absorbés en grandes quantités, les fluorures sont toxiques. Mais il en est de même pour de très nombreuses substances qui font partie de notre nourriture quotidienne. La toxicité n'est pas une question de substance, mais de quantité. L'on voudrait, pour accepter la fluoruration, avoir la garantie absolue qu'il n'en résultera jamais aucun effet nuisible, si faible soit-il. C'est une garantie qu'aucun savant honnête ne donnera jamais et en aucun cas. Mais quand l'on sait que des millions de gens consomment depuis des années de l'eau fluorurée sans aucune preuve d'effets nuisibles, que des dizaines d'expériences sur animaux ont montré qu'à des taux 50 ou 100 fois plus élevés que celui qui est

appliqué, aucun effet toxique ne peut être mis en évidence en dehors des taches sur l'émail, l'affirmation: "il n'y a aucune preuve que le fluorure dans l'eau à la proportion de 1/1.000.000 ait des effets nocifs" doit être considérée comme représentant une garantie suffisante de sécurité.

Les choses en sont là et il est même question de faire intervenir dans le débat toute l'autorité du Président Eisenhower. Attendons les événements... Aussi bien d'ailleurs n'avons-nous rien d'autre à faire puisque, à notre connaissance, aucune initiative ne semble encore avoir été prise chez nous dans ce domaine.

Re: XXXVe ANNEE, NO 41, 8 octobre 1953.
"L'INFORMATION DENTAIRE".

Fiches bibliographiques

The Palatal Plate in Pedodontic Practice

par MAURY MASSLER, D.D.S., M.S., et
T. K. BARBER, D.D.S., M.S.

Traduit et condensé du J.D.C., 3e numéro, 1953.
par Adélar Leblanc, D.D.S., Lachine.

Trois parties composent une plaque palatine: un corps, des crochets et différentes attaches.

Le corps sert d'ancrage. L'acrylique durcissant à froid semble être le matériel qui procure le mieux l'adaptation dont on a besoin.

L'emploi de crochets, de préférence ronds, est une aide précieuse à la rétention de l'appareil dont l'ingéniosité du dentiste peut seule limiter les usages.

Si on lui incorpore une ou plusieurs dents, il servira de mainteneur d'espace fonctionnel. Avec une arche labiale, il permettra de guider l'éruption d'incisives permanentes qui ont une tendance labiale

anormale, de les reculer, si elles sont en protrusion et de les maintenir en place, par la suite. Des plans, horizontaux ou inclinés, en feront un moyen facile de corriger une fermeture excessive ou une fausse malocclusion, classe 11. Dans les cas de sucement de pouce ou de mordillage de la langue, il jouera un double rôle: celui d'éliminer l'habitude pernicieuse, par une clôture linguale, et de corriger la mauvaise inclination des dents, par un fil labial. Qu'on lui ajoute des ressorts et on aura un moyen très simple d'ouvrir ou de fermer des espaces, de repositionner des incisives ou des prémolaires. Certains dentistes l'emploient pour obtenir l'expansion de l'arche.

Cet article mérite d'être lu et relu. Il contient un enseignement précieux pour celui qui est en quête d'une méthode simple, rapide et efficace de faire de l'orthodontie préventive.

Nécrologie

Henri Lemieux, D.D.S.*

Il y a des hommes dont la carrière fut tellement éclatante aux yeux du monde qu'on n'y peut rien ajouter en faisant leur panégyrique. Mais il est d'autres vies plus obscures peut-être mais non moins fécondes par leur profondeur, plus significatives pour ceux qui jugent au delà des apparences et de la vaine gloire de la terre. La vie du Dr Henri Lemieux est de cette dernière catégorie. Et, sa mort tragique (on sait qu'il fut victime d'un de ces bêtes accidents de la rue alors qu'il se rendait comme tous les soirs depuis quelque temps, au chevet de sa mère hospitalisée) nous a fait voir comme d'un seul coup sa grandeur d'âme. Mortellement blessé, déchiqueté par un lourd camion, le Dr Lemieux a trouvé les forces de s'oublier pour songer à dégager la responsabilité du chauffeur de l'auto qui l'avait atteint.

Pour ceux qui ont connu, le Dr. Lemieux, ce dernier geste n'a pas surpris. On trouvera dans ce geste, le résumé de sa vie de générosité envers les autres, de son ardent désir de servir et de ne nuire en rien à personne.

Il est très difficile de raconter la vie d'un homme qui fut tout à son devoir. C'est qu'il n'y a souvent rien de saillant dans une telle vie. Tout s'accomplit dans le mystère de l'âme et les beautés que contient une telle âme n'éclatent pas au dehors. Le Dr Lemieux dont la santé était précaire fut cependant un modèle de fidélité à sa clientèle. Sa clientèle peut-on dire était toute sa vie. Son travail qu'il prolongeait souvent tard le soir était son occupation favorite en même temps que son passe-temps.

Chaque soir dans le quartier qu'il habitait toujours, il s'accordait une courte promenade à pied puis rentrait chez lui. C'est toute la détente qu'il se permettait. Le reste de la soirée, (des intimes l'affirment) il se livrait à des études portant sur son art, préparait ses cours universitaires à la Faculté Dentaire, ou se livrait

à des études d'astronomie, car il était devenu un passionné de l'étude des astres et nous parlait volontiers avec enthousiasme de la grandeur du mystère de la voûte étoilée.

Pour ses clients, le Dr Lemieux était la douceur même, la gentillesse poussée à ses limites extrêmes. On l'a vu en certains cas aller soigner à domicile des patients qui pouvaient difficilement se déplacer et là procéder à son art chirurgical où il était passé maître sans se soucier de son inconfort personnel, compensant par son habileté pour le défaut d'installation mécanique auquel il devait faire face dans un domicile privé.

Mais si le Dr Henri Lemieux a rendu des services dans son domaine professionnel de dentiste, il a aussi rendu d'innombrables petits services à tous ceux qui entraient en contact avec lui. Serviable et affable, il cherchait, toujours l'occasion d'aider les autres et de soulager avec une discrétion admirable leurs petites misères. Il ne se refusait à aucune tâche dès qu'on faisait appel à lui. Parfois ses bonnes actions se résumaient à une parole d'encouragement jetée au hasard des rencontres. Une autre fois, il s'offrait à veiller et demandait qu'on l'appelât même la nuit quand un voisin était en détresse momentanée. Dans son milieu immédiat, dans l'ambiance immédiate de l'exercice de sa profession le Dr Lemieux est passé comme son Maître en faisant le bien. D'une droiture de caractère exemplaire, le Dr Lemieux a prêté le bon exemple. D'une humilité remarquable il n'a jamais cherché à briller et à briguer des honneurs auquel son talent lui donnait droit d'emblée.

Vie cachée, toute vouée au devoir quotidien que seule une mort tragique a brusquement mise en lumière par un dernier geste de générosité. Que la famille du défunt veuille trouver ici l'expression des sincères condoléances d'un témoin et d'un admirateur.

* Cet article, dû à la plume de Maurice Huot, a paru dans La Patrie de samedi. 28 novembre 1953.

Journal

OF THE CANADIAN DENTAL ASSOCIATION

Recent trends in orthodontics*

THE GRIEVE MEMORIAL LECTURE

by G. V. FISK, D.D.S., Toronto, Ont.

No honour could have been conferred upon me which is more keenly appreciated, than to have been asked to give the Memorial Lecture in honour of Dr. George Wellington Grieve. His competent tuition during the undergraduate course stimulated my interest in orthodontics. After graduation it was my privilege to become associated with him in practice as the first of several orthodontists who took preceptorship training under him and as a result, became imbued with the ideals for which he constantly strove.

George Grieve practised in an era during which orthodontics was an inexact groping specialty. He contributed to its evolution which eventually resulted in the development of a definite specialty that provides distinct health benefits to handicapped children. In addition, it is one in which the profession and the public now have confidence.

Progress is a law of the universe. The upward climb of civilization is in-

dicative of human progress. Just as individual development contributes to the aggregate of human progress so, too, any advancement of civilization is reflected beneficently upon the individual.

Continuous progress is vital to the life of any profession: Orthodontics is no exception to other professions in the progressive advancement which has been made in scientific knowledge through the years.

It is my purpose today, to discuss with you some of the recent trends in orthodontic progress and to assess their significance in relation to possible future courses of advancement.

A most important advance in orthodontics resulted from a revision of basic concepts. During the early stage of the development of the specialty, the popular concept was that normal occlusion was nature's plan. When deviations from normal occlusion developed, the causes were attributed to local, congenital, metabolic factors or to disease. Consequently, the early development of orthodontics was technological. Members of the specialty

*Delivered to the Canadian Dental Association Convention, October 1953.

vied with each other in the development of mechanical devices for the correction of a single malposed tooth, mainly for aesthetics.

As more dentists were attracted to the specialty, more uniform methods of treatment were adopted which became standardized into systems. With this advancement in treatment methods, the objectives of treatment were extended to include the correction of a number of malposed teeth for the improvement of functional efficiency of the dentition. Failure to attain perfection in inter-dental relationships was considered to be an indication of failure in treatment.

Only after the shortcomings of each new appliance were demonstrated, did orthodontists fully realize that there are physical disharmonies in jaw growth that cannot be basically corrected.

Hence the conclusion is inevitable that all individuals are not similarly endowed in their inherent potential for the attainment of a perfect dentition.

The problem of major malocclusion therefore, is one of disharmony of teeth and jaws and of the growth mechanism by which the erupting teeth are guided into occlusion. It is the problem of the evolution and growth of the facial skeleton.

While these abnormalities occur spasmodically in all people, and at various times, the incidence of irregularity and malocclusion is great only in modern civilized races of mankind and in high degree only in certain stocks.

Evidence has been adduced to indicate that the bones forming the facial skeleton are determined early in life and that variations in the jaws, similar to those found in malocclusion, occur in the foetus and the new born child. Moreover, malocclusion in the deciduous dentition is common.

There is an evolutionary background to the problem of malocclusion imply-

ing selection and inheritance of variation in the marked reduction of the ratio of the face to the skull which has occurred. The alveolar element of the jaws has been reduced more than the basal and although to a lesser extent, there has been also a reduction in the number and relative size of the teeth.

Evidence is accumulating to indicate that the genetic constitution is a primary factor in the problem. The evidence of genetic linkage in jaw malformations particularly those of the premaxilla, strongly supports the theory of inheritance.

Based upon the evidence from a study of the malocclusions in families and especially the evidence from comparisons of occlusion in duplicate and fraternal twins, inheritance is now recognized as a prime aetiological factor in malocclusion.

Frequently environmental factors combine with inheritance in the aetiology of malocclusion. Such factors as habits, abnormalities of muscular tissues of the mouth, posture pressure, constitutional diseases, abnormal functioning of the ductless gland and faulty metabolism are some of the factors which may require investigation before the institution of orthodontic therapy for the treatment of malocclusion.

The greatest influence on dentistry during the past quarter century has been the increasing value and interest in research. During this important period, orthodontics has been in the vanguard of research and there is every indication that it will continue to occupy a dominant position in this important field. There is a growing conviction that the sciences have a vital contribution to the work of the dental investigator. Consequently, the ramifications of orthodontic research and the accruing knowledge, have been a constant stimulus to further effort.

Progress has been made to increase our knowledge in several important

areas. It is appropriate that mention be made of a few of the recent advances in factual knowledge resulting from research.

Valuable information respecting the growth mechanisms of the jaws and the face has accumulated particularly with reference to the sites of growth and their activity. In addition, further data have been adduced in connection with the changes occurring in the transition from the deciduous to the mixed dentition and from the mixed to the permanent dentition. Special studies have been directed towards the sequence of eruption of the permanent teeth. Detailed studies have been undertaken by various workers which have revealed variations in tooth position and occlusion, as well as variations in the relationship between the dentition and the facial skeleton and between the facial skeleton and the cranial base. These studies have provided a basis for scientific orthodontic diagnosis.

Scant attention in the research programs has been given topics of immediate interest to the clinical orthodontist. Few important contributions have been reported dealing with the significance of malocclusion in relation to function, prophylaxis or aesthetics.

Studies directed towards a determination of the favourable stages of dentition for the commencement of orthodontic treatment indicate a trend towards treatment of the younger age groups with special emphasis on the mixed dentition stage.

While the knowledge of aetiology has been extended and sufficient progress made to modify methods of diagnosis, there has been little change in the methods of classification of malocclusion. Orthodontists still adhere to the classification based upon deviations from normal occlusion. A classification with aetiology as a basis would constitute an important advancement in orthodontics, and would place the classification of malocclu-

sion on a more scientific foundation.

One important development which has had a profound influence upon the trend of research, has been the cephalogram. Its use has made possible studies in growing children of such characteristics as the development of the dentition, growth changes in the jaws, the facial skeletal pattern in both its static and dynamic aspects. Furthermore, the cephalogram has also been useful in the detailed consideration of such factors as the rest position, the freeway space, the path of closure, the relationship of the denture to the skeleton and the changes which have been effected through orthodontic treatment.

In the study of the true skeletal pattern of the face and the pattern of growth, there has been a concentration upon bone with consequent neglect of the important activating agencies, the muscles. Recently, some attention has been given to muscle function. It is reasonably safe to predict that workers in this field, during the next few years, will extend our knowledge of muscle physiology to an extent similar to that obtained in osteology during the past twenty years.

Sporadic investigations into the mechanical forces used at present in orthodontic treatment reveal that they are greater than the limitation imposed under the precise definition of physiologic forces. However, there has been a marked trend towards the use of milder pressures through the utilization of wires of smaller diameter in the fabrication of orthodontic appliances. The principles of anchorage have received more attention resulting in a more extensive use of extra-oral anchorage.

While the advances in orthodontic research are substantial, they mark only a beginning. There are more unsolved problems confronting the research worker which eventually will be resolved so long as they are ap-

proached in a spirit of enthusiastic determination and vigor. In the field of dental research lies the destiny of orthodontics.

Research and teaching in the professional school go hand in hand. As new facts are brought to light through dental research, dissemination is made through the schools of dentistry. Therefore, constant enquiry into the vast unexplored areas of pertinent, natural phenomena is essential for the dissemination of factual material and as a background for the teaching of scientific dentistry. The responsibility of a dental school goes beyond the training of dentists for practice. That this function of the dental school is fundamental none will deny; but, it is equally important that the teachers in the dental schools are based in the sciences and that scientists are prepared who will devote their efforts to uncover new knowledge to form the background of further teaching.

To maintain the dental curriculum at the University level, it is deemed advisable that more personnel of the dental school be trained in the basic sciences of the University.

Dental administrators, cognizant of the need, are encouraging dental graduates of promise to take training in the basic sciences. This is a long-term investment directed towards a solution of clinical problems. The growing trend towards intensive study in the sciences indicates a new status for the instructors in the schools of dentistry. So long as scientific knowledge is the basis of education, future progress of dental education will be in the right direction.

Not so many years ago, undergraduate instruction in orthodontics in the dental school was limited to a few lectures with clinical demonstrations of treatment during the third and fourth years. This inadequate training resulted in the graduate dentist either ignoring the problems of malocclusion or patiently learning effective methods of

treatment, after graduation, through trial and error when specialized services were not available.

With the increased appropriation of the number of hours in the dental school to the teaching of orthodontics, has come an approved grounding in such aspects of the problem as growth and development, the evolution of occlusion, a general understanding of the possibilities of treatment and the time to advise orthodontic treatment. In some schools a knowledge of mechanics is included for the treatment of incipient malocclusion. This further knowledge should result in an improvement in the orthodontic service by the general practitioner of dentistry.

The dentist to whom the newer knowledge was not available previously is not overlooked in this modern teaching program. Continuation courses are currently offered which include some of this newer knowledge and graduate dentists are availing themselves of these opportunities to become more proficient in the orthodontic service to their patients. In the teaching program of our dental schools, the present trend is for a greater integration of the various departments of clinical dentistry for the teaching of diagnosis, prevention and the new concept of the masticatory system. In this new concept, the emphasis is placed upon the dynamic rather than upon the static phases of the masticatory system. The knowledge of growth and development of the jaws which has been promulgated within the orthodontic specialty, is considered essential in the modern teaching program. Orthodontics then, has much to contribute to the basic knowledge of the dental student in the shift of emphasis to the prevention and control of dental diseases.

The present objective of undergraduate teaching is to provide a basic foundation for the dentist so that he may be able to comprehend malocclusion and related complications and be

able to advise when advice is sought. Furthermore, he should be able to institute interceptive procedures when necessary. Considerably more time will be required in the curriculum of the dental school if sufficient training of practitioners is given to qualify them to do simple orthodontic treatment.

There is a noteworthy change in method through which has developed a scientific approach to teaching. This development has been brought about through the prominence accorded prevention, in the curricula of the dental schools. Most of the accepted methods of prevention are based upon scientific investigations.

The dental student must not only graduate with the latest scientific knowledge of prevention, but in addition, he must be imbued with the ideals of prevention. The teaching program in the dental school constitutes a guide for the future practice of the dentist. This applies as much in orthodontics as it does in any other phase of dental practice.

Dental education is in a process of transition. Scientific development and the resulting enlarged scope of dental education are in serious conflict with the policy of graduating dentists technically trained for immediate practice. In the long run, technical proficiency must assume a secondary role. A plan patterned after medicine, through which the graduate acquires practical experience one or two years after graduation, may be the solution to the problem of adequate clinical training. Such are the demands of modern practice that an orthodontist must be competent to practise his specialty. Competency requires specialized training. Such training is provided by the graduate course during which advanced studies are augmented by diagnostic and treatment experience. However, even after the completion of a graduate course, there is need for further clinical experience. Interest in

graduate training in orthodontics must be engendered during the undergraduate course. Already the expanded program of undergraduate teaching in orthodontics is reflected in an increase of the number of applicants for graduate study.

That dentists continue to apply in large numbers for graduate training in orthodontics is highly important. Of the dentists of Canada there is a disproportionate distribution in the higher age groups. This applies similarly to the specialty of orthodontics. The personnel wastage during the next ten years must be offset by an increase in the number of dentists and specialists trained during this period.

Through the years, the interest of the C.D.A. Council on Dental Education in Orthodontics has been genuine and sincere. Last year at a meeting of the Council at which two representatives of the Orthodontic Section were present by invitation, the following resolution was approved "That the Council appreciates the viewpoint of the Orthodontic Section that the teaching of orthodontics to undergraduate students should be directed towards preventive and interceptive orthodontics and that this Council urges dental schools to review their programs on this matter."

The employment of ancillary personnel has enabled the orthodontist to render more efficient service. The services of the specially trained dental assistant has been of much value to him in the conduct of his practice. The dental technician, either as a member of the staff, or as a service provided by the commercial laboratory has relieved the busy orthodontist of burdensome details of appliance construction. The recent introduction into Canadian dentistry of the dental hygienist provides a capable ally in the control of dental diseases. The dental hygienist is well qualified to assist the orthodontist in the maintenance of oral health throughout the period of ortho-

dontic treatment. The introduction of courses of training for the dental hygienist was a forward step by two Canadian schools of dentistry.

Even a cursory review of the progress of orthodontics over the past quarter century will reveal changes in ideas concerning treatment. With the discovery of new facts, this is likely to continue in the years to come. Twenty-five years ago orthodontics was primarily a system of appliance manipulation. Now mechanics is considered only a part of the problem. Orthodontics today requires a study of inheritance, normal and abnormal growth in order to determine when something goes wrong, what is wrong, how it can be improved and the best time for improvement.

Orthodontic appliances are being constantly revised. With the introduction of newer methods and materials into dentistry, adaptation has been made to orthodontic therapy.

Moreover, concepts concerning treatment objectives have been under revision. Improvement of the relationship and the alignment of the maloccluded teeth, within the genetic potential of the individual, is the logical objective of a treatment plan which has reconciled therapy with theory. This concept of occlusal betterment, places before the orthodontist a rational objective superseding the former objective of a hypothetical ideal which was rarely possible of attainment. The almost universal practice of dental arch expansion of former years has given way to a more conservative attitude. Recently, there has developed a greater reluctance on the part of the orthodontist to disturb appreciably, the lateral width of the dental arches.

The realization that forces however mild they may be, influence only the alveolar bone and that the oral and facial musculature limit the possibilities of permanent arch expansion both have contributed to this realistic viewpoint.

The use of appliances for intermittent treatment is an important trend not only during the period of stabilization following orthodontic treatment, but also for the correction of dental irregularity.

That the possibilities and limitations of orthodontic treatment be thoroughly understood by the parent and the dentist beforehand, is of prime importance. Such a thorough understanding clarifies the degree of expected improvement and eliminates possible disappointment which may arise if the anticipated result was higher than that attained.

The question of the extraction of teeth as an adjunct to orthodontic treatment has received extensive consideration during the past few years. The main issue is no longer whether or not extraction should be undertaken, but rather the frequency with which extraction should be recommended in the treatment of malocclusion.

At this point it is deemed advisable in the interest of clarity to define the type of extraction under consideration. That the jaws do not always develop sufficiently in size to support the full complement of teeth in good alignment, is commonly observed. The elimination of dental units, usually two or four, is frequently recommended prior to orthodontic therapy to effect a balance between tooth substance and the supporting bone.

This then is the type of extraction under consideration and not the idly considered removal of one dental unit largely because of malposition. Such a malposed tooth is often merely symptomatic of a temporary retardation in jaw growth and is not always the one which is recommended for removal by the orthodontist. Therefore, its loss is frequently detrimental to the attainment of a satisfactory occlusal adjustment of the teeth, either with or without orthodontic treatment.

When the elimination of dental units

as an adjunct to orthodontic therapy is under consideration, it is advisable that the complications in each case are fully understood and the responsibility evaluated by both dentist and orthodontist. The development of both a fine perception and an unwarped judgment are necessary when this procedure is contemplated.

As a group, orthodontists are demonstrating their desire to reconcile therapy with the newer knowledge of diagnosis, case analysis and treatment planning. It may be pertinent to observe that some of the older men hold dogmatically to the use of the mechanical methods in which they received their initial training. Addiction to one type of therapy may result in a serious handicap to a satisfactory result. On the other hand, the zeal and devotion demonstrated by our younger men augurs well for the continued advancement of our specialty. They are ready to adopt any technical change which has proven itself of value and are equally ready to relinquish outmoded methods which have been supplanted by newer and more efficient ones.

The development of interest in early treatment is one of the heartening trends in recent years. It is an indication of the effectiveness of a basic knowledge of growth and development. The routine examination of the occlusion of each young patient by the dentist, offers him the opportunity to provide orthodontic service when deviations occur.

The mixed dentition period presents an opportune stage for mechanical intervention for the correction of many types of malocclusion. A major dental irregularity may be attenuated by interception at the proper stage. Orthodontists have given particular attention in recent years to the development of simple methods for the correction of malocclusion during the mixed dentition stage.

There are many phases of general

practice which bring the dentist a large measure of personal pride. Possibly no higher degree of satisfaction results from any other service than from the successful interception of a developing malocclusion. On the other hand, there is no phase of practice that may be more detrimental to professional progress in a community than the unsuccessful treatment of a few cases of gross malocclusion beyond the scope of the average practitioner. Careful study of each case will frequently reveal unrecognized factors that have an important bearing upon successful treatment. Therefore, the selection of cases for orthodontic treatment by the general practitioner of dentistry is an extremely important consideration.

The significance of malocclusion as a problem in public health is being recognized to an ever increasing extent. In various parts of Canada and the United States of America, studies of malocclusion are in progress to ascertain the incidence curves and to test the value to the community of an educational program from the standpoint of public health. The study at Burlington, Ontario, is an example of this type of program as a component of a health unit. In some areas an interceptive treatment service is included. This type of service has been in operation as an integral part of the Toronto school dental program for over fifteen years. Recognition of the value of orthodontic care to the physical and mental well being and social adjustment of the child is receiving general recognition by parents, educators, and health workers.

No program of dental care for the child is complete without inclusion of an assessment of the growth and development of the jaws. When deviation from normal occurs, procedure should be instituted when indicated in order to intercept or at least attenuate the malocclusion.

Because of the unequal geographic

distribution of Canadian orthodontists all areas are not equally served by this specialty. Therefore, in those areas not adequately represented the general practitioners of dentistry are induced more frequently to take the initiative in the control of the problems of malocclusion by performing the important service of interception for their patients.

As an alternative, the selection of young graduate dentists to take special training in orthodontics would be another means of providing orthodontic service for such areas. Under provincial or local dental society sponsorship, these dentists could be offered instruction in orthodontics at the graduate level with the understanding that they return to practice their specialty in the area in which their service is most needed.

It seems desirable for those dentists who have not received the benefits of the newer knowledge of orthodontics to take advantage of every oppor-

tunity to become proficient in the diagnosis and treatment of incipient malocclusion. An investment of time for the study of this problem will enable him to make a worth while contribution to the betterment of the dental health of the child.

Although comparatively a young specialty, orthodontics has made phenomenal progress. Probably no other dental specialty has made a greater impact upon the profession of dentistry. Particularly in the areas of research, basic education, and therapeutics has this contribution been manifest. The value of orthodontic care is receiving greater recognition by parents, health workers, and educators and finally, the knowledge accruing from studies of growth and development of the jaws has increased the effectiveness of preventive and interceptive orthodontics as a health service. Let us co-operate to bring the benefits of orthodontic service to every Canadian child with malocclusion.

The dentist as a person

by BERNARD B. RAGINSKY, M.D., C.M.,
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MOST professional men are concerned with regard to the toll taken by anxiety and tension which accompanies the carrying out of their professional duties. These pressures in turn tend to overflow into his family life and in his contact with his friends and colleagues. It would seem that the average dentist, disturbed by world conditions, uneasy about some tendencies closer to home, and at the same time fascinated by the rapid advances made in his own field of endeavour, turns a searching eye on his own profession and a critical one on himself.

Whether he be a general practitioner

or a specialist, the dentist shares with all his colleagues the same basic qualities. He is primarily a hard-working person. Exacting, arduous and prolonged hours are his lot from the beginning. The fast pace set during his training period seldom slows down appreciably for the first twenty years of practice. The days of his years are filled with excitement of diagnosis, with the thrills of treatment and with the satisfaction of seeing improvement and cure, as well as with the disappointment of failure.

He studies assiduously. Singly or in groups, he spends hours in reading, writing, attending conventions, meetings and postgraduate courses; hours during which he feels nearest to scientists and to other practitioners who, like himself, occupy the outposts

where there is pain, fear and danger. He has established for himself a code of ethics which, considering human frailty, holds him to a high professional standard. The rules governing his conduct are too numerous to be considered separately; but one word might be added about one dominant principle that may well be considered as the foundation of the others, and that is his respect for living tissues and life itself¹.

The sacredness of the patient, instilled into him during his student days, permeates his conscience, influences his thinking and dominates his actions throughout the duration of his career. His conviction on this subject, often in conflict with the dictates of opportunism, have succeeded in erecting legal protective measures at various points where life is threatened.

The dentist may be considered to be something of a philanthropist, not only with his capital but also with his labour. From his daily contact with illness, he acquires special psychologic traits that may be considered characteristics. He has never forgotten the thoughts that haunted him after his first visit through the hospital clinics or wards. Particularly vivid in his memory is the sense of helplessness that overwhelmed him whenever, the bedside demonstration over, and as the group was moving toward the next patient, the professor added in a hushed tone: "As you know, gentlemen, this condition is fatal." The student could not help casting another glance at the condemned, whose eyes often followed the retreating students with that knowing look so hard to bear. Whether he is conscious of it or not, every practitioner carries through his professional life the mark made upon him by his first encounter with fatal illness.

Is it not the first moral shock of the dental student that inspires the research worker to look for improved

methods, the clinician to think of new concepts, the surgeon to try better techniques, and the practitioner to keep his exacting schedule? Medical and dental discoveries can benefit mankind only in the measure of their practical application. And how can such application be brought to the patient without the practitioner qualified to recognize the condition and to administer the proper treatment? Every conscientious member of the profession, on the sole basis of his hard work, may claim his share of credit for the blessings medicine and dentistry have brought to mankind.

Is not the dentist a practical philanthropist when he sacrifices his night's rest and his freedom to answer an emergency call of pain or haemorrhage? Is he not a philanthropist when he gives from two to six hours of his time every week to charity? Is he not a philanthropist when he exposes himself and his own health in treating patients with contagious conditions? Perhaps no branch of endeavour has done as much as medicine and dentistry to bring about universal brotherhood. Never in the performance of his duty has he found anyone's blood nobler than that of another, or anyone's flesh of finer texture than that of another. Whereas national allegiances are restricted by boundaries, and religious thinking is confined by denominations, medical thought is universal in scope and application. Medical and dental workers place their findings at the disposal of the world without even a thought of remuneration. Ether is not American; radium is not French; insulin is not Canadian; penicillin is not British¹.

The true dentist has a heart that he puts to constant use. He may appear to be matter-of-fact and hardened to human suffering, of which he sees much; but the fact that his life is spent in alleviating physical pain and mental anguish proves that he is opposed to

both. A large range of anesthetics and an infinite variety of analgesics stand as a long and persistent record of the concern he has over all sufferers. But above and beyond the conquest of physical pain, tradition requires of its followers the dispensation, a hundred times a day in a hundred different ways, of sympathy, encouragement and hope. It is precisely the humanity, affability, and brotherly compassion of the dentist which often prove most efficacious remedies for his patients. Few human relations are carried out on a more satisfactory basis than the doctor-patient trade of trust, of confidence and of gratitude. No matter what the form of their enactment, they warm the heart of most dentists and fill their days to the brim.

For all his apparent satisfaction, the practitioner is nonetheless capable of self-criticism. He is often conscious of the broad principles of his profession and some of the parochial thinking he indulges in. He is forced to admit that exclusiveness inspired by prejudice rather than selectivity based on qualifications sometimes presides over his choice of associates. He is not proud either, of the way he feels towards some of his colleagues for purely personal reasons. He knows that deep down inside what he calls loyalty should be labelled more properly clannishness and that what he designates as conviction is really prejudice.

In the too rare moments when he allows himself a little excursion into psychology, the dentist wonders if, knowing man as he does, he knows humanity as he should. A sick person is not only a body attacked by disease, but also a mind disturbed by worry; yet, in most cases, the former receives all the care. Focusing his attention on the physical lesion, the dentist does not always see enough of the person behind it. Judging by the increasing number of articles on dental psycho-

somatic problems in the recent literature,^{2,3,4,5,6,7,8,9,10} he seems to realize that, regardless of the pressure of work and the wear of routine, he must become more conscious of his patients' complexity and more attentive to the psychologic processes that precede or accompany physical derangements.

The dentist also realizes that his vision may have been too narrowly circumscribed by professional boundaries. He has little or no chance to observe the patient in his natural habitat; in his part of town, in his house, in the midst of his family, among the objects that make his life what it is. In his home a man is a husband and a father, in the office he is a patient. In the shop he is a master-mechanic, in the office he is a case of malocclusion. In his union local he may be vice-president, in the chair he is a case of pyorrhea. Efficiency in the dental office has gained, but some warmth has been lost which a little thought could easily restore.

Despite his reputation as a skeptic, the dentist indulges at times, in metaphysics. While scrutinizing the test-tube and peering through the microscope, the majority of the modern scientists soon realized that they had only discovered windows opening into another world. Through the microscope they have studied the structural arrangements of the cell, and in the test-tube they have weighed the molecule and analyzed the chemical components of the protoplasm. But when they begin to align their figures and express their equation, they cannot write down as the answer: man, — living man, with his desires and his passions, with his worries and unhappiness, with the good and the bad that is in him. The noble faculties and the high aspirations found in man, even if counter-balanced and, at times, overshadowed by degrading propensities and low instincts, can hardly be explained on the sole basis of metabolic

exchanges and oxygen combustion. Having been closer, perhaps, than most to those who suffer, the dentist could not help but notice among them a sense of unfinished business, of un-ended quest for something better, more satisfying, more permanent than anything known. This also, he finds difficult to explain in strictly physiologic terms.

As he ascends the gentle slope that imperceptibly but inexorably leads him to the summit of his life, the dentist's field of vision broadens. Objects, which close to appeared out of place, become well integrated parts of the larger vista unfolding before his eyes. Persons whom he once regarded as wandering aimlessly, now appear to be following a definite path. Objects and persons fit well into their environment and seem natural components in the same pattern. That some parts of the design are difficult to interpret, the dentist well knows. He has been too close to sickness, to deformity, to physical pain and to mental suffering not to take them into good account. No one has been struck more often than the doctor by the contrast between the splendour of health and the ugliness of disease. No one has been closer to the apparent heedlessness, not to say hostility, of nature. If death remains inevitable, what can the dentist do to make his life healthy physically and spiritually?

The emotional strains and upheavals of a busy dental practice affect the dentist only in relation to his own personality make-up. The stress and strain of any other occupation or profession would have a similar impact on him. Hereditary factors, the emotional climate in which he lives, the degree of emotional maturity and social security he has attained or not attained, all play a role in his desire for emotional equilibrium.

Dentists have been so interested in allaying the anxiety of their patients that they have paid too little attention

to the fear and anxiety in the dentist himself. This anxiety may be overt or concealed, but is most commonly present in those who fear that they do not know enough about handling the anxiety of their patients, and are perhaps aware that they are not applying all available evidence concerning this subject either in theory or in practice. Because of this they tend to become insecure and to develop professional phobias. They always appear to apply the same concepts and therapeutic measures. Any attempt to change their attitude towards dental procedures acts as a threat to their organized defense mechanisms. They really do not learn in this field. They pay a high price for this method of defence, both physically and mentally. In order to handle the patient's fears and anxieties, one must have one's own fears well resolved. Herein may lie one of the factors responsible for the difference in attitude between various dentists toward their patients and toward their profession. It may also account for the fact that insecure dentists tend to have their patients heavily pre-medicated before manipulative work, since this type of patient presents a lesser threat to the emotionally insecure operator than does the more wide-awake one¹¹.

The emotionally secure dentist will adjust himself to almost any type of income he may earn, while the emotionally insecure practitioner will be insecure no matter how high his income may be. Here again we see that it is not the external pressures which cause the dentist most of his difficulties but rather his internal turmoil, a turmoil which most likely was present before he started the study of dentistry. The emotionally mature and secure personality is able to direct the events in his professional life and guide it to his will. The emotionally insecure is pushed around by the events surrounding him.

It is not within the scope of this

presentation to give an outline on how to develop this emotional security and maturity. It would serve my purpose, and perhaps yours too, to make you aware of the basic reason for difficulties in professional life; to realize that these difficulties are due not so much to lack of intelligence or brilliance (for many a successful man has neither), but is due to a sense of security, inborn, acquired, or borrowed from his spouse. With it, he can make the most of his capacities; without it, he can only remain in a perpetual turmoil.

A dentist may save himself considerable wear and tear both in the physical and nervous systems if he can develop empathy instead of sympathy for his patients. While sympathy for the patients' needs is acceptable and comforting to the patient, nevertheless, for the dentist something more is needed in the way of understanding the patients' needs. Sympathy means that the doctor understands the patient's feelings only because he himself has had some of these feelings and consequently understands and sympathizes with them. However, when a patient shows a behaviour that is completely foreign to the doctor's own personal experience within himself, his behaviour becomes unsympathetic and he tends to ridicule the symptoms or fears and to minimize them. In any event, under these conditions, not only does the patient feel misunderstood and hurt but from the point of view of this presentation, the dentist is placed in a bad position and reacts to it with aggression and hostility. Neither of these two emotions help his own health and only tend to interfere with his relationships with others in his milieu. Because of all this, it is necessary for the dentist to develop some degree of empathy which allows him to understand what makes his patients behave the way they do. This behaviour may relate not only to the patient's attitude towards pain but it

can relate also to the patient's handling of his appointments, his attitude towards the payment of his accounts, or his possessiveness of the dentist's attention and time. If empathy is not applied in these various situations, much unnecessary friction, resentment, frustration and hostility result. While some degree of empathy may be taught to all dentists, not all acquire it well, since it is intimately bound up with one's own childhood training. Briefly stated, the person who has been taught in childhood and adolescence to be considerate of other people's point of view, is a better candidate for developing empathy. Fortunately it is both for the patient and the dentist when the dentist has not only sympathy but empathy as well⁵.

Financial pressure is only relative. For tension to be present in this situation there must be a gap between what the person has and what he needs to fill both his emotional and practical needs. From this it will be seen at once that a great deal depends upon what the individual wants. A well-adjusted individual may be satisfied with a very modest income while another, whose emotional needs have been displaced into financial needs, may never be satisfied no matter how much money he earns. To produce a satisfactory state of relaxation in this type of person, one must give him insight in order to visualize money only as a symbol of another type of insecurity such as his social relations with members of his group.

Some external pressures fall into the category of temptations. These temptations all have a common denominator in that they are intended to satisfy a conscious or unconscious need. When the need is conscious, one may fight it off more easily, but when it is unconscious, more energy and tension are used in fighting off the unknown cause, since it cannot be identified or localized. In order to relax successfully, one must localize the dis-

turbing agent and resolve it or adjust to it more adequately.

Personality structure in the dentist's make-up plays a very important part in his behaviour towards his work and his patients. Individuals with compulsive or obsessive trends tend to wear themselves out because they are distracted by all sorts of unimportant details and are unable to concentrate on the main issues of life. They appear to be unable to lose their own identity in a group no matter whether it be at a football game, at a party, or at a dental meeting, because their personalities stand out like a sore thumb. This type appears to be affected by all the stimuli around him, whether they are directed towards him or not. Because of this, they cannot become part of a group. They doubt the sincerity of others and consequently do not make friends easily. There is also a definite effort on the part of these dentists to control the behaviour of others and tending to resort to temper outbursts when they are frustrated or unsuccessful. Such individuals have had very little kindness shown them when they were children and, in turn, they show very little consideration to others about them. This type of dentist is intolerant of human foibles and does not get the most cooperation from his patients. He tends to be inordinately tired and often suffers from gastro-intestinal disturbances. His obsessions and compulsions cover some type of basic anxiety which must be cleared away before he is able to enjoy his fellow-men and the ability to relax. Untreated, this type of individual receives most satisfaction from pointing out other people's errors or deficiencies. It requires only one compulsive-obsessive patient for the compulsive-obsessive dentist to have a very bad day of it!¹²

The dentist who suffers from some degree of migraine, whether he is aware of this condition or not, suffers very much in the same way as the

compulsive-obsessive individual. The migraine headache and nausea play a comparatively small part in the symptomatology of this condition. These individuals are almost always very bright, intelligent and perceptive. Unhappily, this only leads to an excessive awareness of all that is going on about them. They are more than normally aware of sounds, smells, drafts, colour and light. They tend to be perfectionistic and since nothing is perfect, they are constantly frustrated in their attempts at perfection. This frustration leads to aggressive and hostile behaviour to say nothing of their feelings of guilt and self-criticism. They tend to put too much concern into little things and their desire for perfection causes them to overwork. They get tired and tense not only from the work they do but also from the tension and concern over the work they see waiting to be done. They are tight as a drum and are wound up like an eight-day clock. This attitude is evidenced not only in their dental work but extends to all their other relationships. Since these people do not handle acceleration or deceleration well, any change in pace upsets them. It is hard for them to take holidays, especially weekends. Weekends at home tend to be coloured by irritability, restlessness and depression. Resumption of work on Monday morning finds them better¹³.

Another type of personality with which most of us are familiar is the martyr type. They are more than willing to have all problems dumped on their shoulders regardless of the amount of responsibility incurred. Some of the finest dentists I have known fall into this category. They never appear to be happy unless they are suffering for others. They seldom seem to have time for themselves but appear able to squeeze just a little more effort towards helping others. This type of individual usually has some deeply buried guilt for which he

attempts to do penance by excessive consideration and help for others.

There remains another important factor which tends to thwart emotional equilibrium or homeostasis in some dentists. There are certain types of illness which come under the heading of psychosomatic illness which tend to increase nervous tension as in a vicious circle. At the top of this list is hyper-metabolism which stokes the fire of nervous energy to such a pitch that the individual cannot rest well at any time, even in his sleep. There are other affections which are the result of tensions themselves but cause still more tension because of their symptoms, as, for example, certain types of eczema, hives, urticarias, stomach ulcers, irritable bowel, high blood pressure, etc. These illnesses have a component of emotional maladjustment in their causation and tend to perpetuate themselves as the tension increases. It is obvious that in such conditions, the sufferer needs trained help in relieving the maladjustment and that true relaxation can come only when the irritating cause has been removed or at least when the symptoms have subsided.

To meet the ordinary frustrations of life and dental practice with some degree of equanimity, one must be emotionally mature. This means that the personality make-up is integrated in such a way as to make a person independent emotionally from figures of authority. He is relatively free from feelings of inferiority, egotism and over-competitiveness. His conscience is adult enough to aid rather than hinder further development. Mature people use their aggressiveness productively instead of turning it against themselves or others. They are able to love others besides themselves and to adjust to these people's needs. They can make decisions smoothly and easily without procrastination and are able to stick by them. Their work capacity

is constant and they do not require frequent changes or holidays in order to be efficient. These people have a real grasp on reality and are flexible enough to adjust to new situations without difficulty. As mature individuals, they are productive socially and help, not only individuals, but the community they live in.

To reduce the pressure and strain under which he lives, the dentist should attempt to strengthen or repair the four pillars upon which his personality rests. These four pillars might be summarized as follows:

1. Absence of mental or physical symptoms. The presence of any of these alone or in combination should be corrected.
2. The ability to make decisions easily and quickly and be able to stand by them. He will soon learn that it is better to be decisive for, if a wrong decision is made, he will know the next time how to correct or avoid it. Indecisiveness is related to conflicts. These conflicts arrest progress and usually result in fatigue.
3. One must develop a satisfactory capacity for work without frequent need for change or holidays. In the healthy individual, optimum efficiency is maintained during an eight-hour work day. Lack of this ability suggests maladjustment somewhere and should be investigated and cleared up.
4. The ability to see other people's emotional needs and to be able to adjust to them easily. This involves lack of narcissism. If narcissism, or love of self, is present to too great a degree in the individual, his ability to see the world and its people is impaired. Correction of this maldevelopment is a major procedure but much can be done to ameliorate its effects.

In conclusion, one must always bear in mind that, while one is constantly treating patients, the doctor himself is susceptible too and often does have the very same traits and illnesses that he sees in his patients. Because of the nature of the situation, the doctor tends to avoid seeing himself in a true

light. He tends to be defensive when exposed and difficult to treat when sick. This may be conceived of as a professional hazard but it must be emphasized that it is also susceptible to re-education and treatment¹⁴.

REFERENCES

1. Dufault, P.: *Medicinae Doctor*, 1950. New England Jour. Med. 242:429-436, 1950.
2. Campbell, D. G.: Psychosomatic mechanism in oral disease. *Am. Jour. Orthodontics*, July 1945.
3. Stolzenberg, J.: *Psychosomatics and Suggestion Therapy in Dentistry*. New York, Philosophical Library, Inc., 1950.
4. Ryan, B. S.: *Psycho-biologic Foundations in Dentistry*. Springfield, Ill., Charles C. Thomas, 1946.
5. Raginsky, B. B.: The psychosomatic approach in dentistry. *Jour. Can. Dent. Assoc.* 18:669-678.
6. Raginsky, B. B.: Some psychosomatic aspects of general anesthesia. *Anesthesiology* 11:391-408, 1950.
7. Raginsky, B. B.: Mental suggestion as an aid in anesthesia. *Anesthesiology*, 9:472-480, 1948.
8. Raginsky, B. B.: Pre-anesthetic management of the ambulatory dental patient. A survey of the measures necessary to relieve anxiety and apprehension. *Anesthesiology*. In press.
9. Moss, A. A.: *Hypnodontics, Hypnosis in Dentistry*. Brooklyn, Dental Items of Interest Publishing Co., Inc., 1952.
10. Ament, P.: Stress removal in dental practice with hypnodontics. *Jour. Dent. Med.* 7:4 (Oct.) 1952.
11. Raginsky, B. B.: Hypnosis in internal medicine. In: *Hypnosis in Modern Medicine* (J. M. Schneck, Ed.), Springfield, Ill., Charles C. Thomas, 1953, 28-60.
12. Raginsky, B. B.: Relaxation and the teacher. *Educational Record*. 66:8-14, 1950.
13. Raginsky, B. B.: *Psychosomatic Medicine. Its history, development and teaching*. *Amer. Jour. Med.*, 5:857-878, 1948.
14. Roberts, C. L.: Blueprint for improved physician-patient relations. *J.A.M.A.* 149:1194-1196, 1952.

A complete cleft rehabilitation programme for cleft lip and palate cases*

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THE purpose of this presentation is to describe the results achieved during the past three years in the Cleft Palate and Speech Clinic of the Royal Victoria Hospital. This project has been supported by a Federal-Provincial grant for Crippled Children. It was one of the first awarded in Canada and it has been of inestimable value in the rehabilitation of a large group of severely handicapped children.

INCIDENCE

One of approximately seven hundred and fifty babies born in Canada is afflicted with an ugly deformity of cleft lip or palate. For some unknown reason the embryonic tissues which take part in the formation of a normal lip or palate fail to develop in the usual manner and result in the child being born with a cleft lip or palate. These individuals are a tragic group

because their defect, which is seldom fatal, causes a most marked facial deformity or interference with speech if untreated.

Although surgeons have repaired clefts of the lip and palate for centuries it is only in comparatively recent years that an integrated and planned programme of rehabilitation has been developed. Such a programme requires the expert services and co-operation not only of the plastic surgeon but of a group of specialists which includes the pediatrician, geneticist, dentist, otolaryngologist, speech therapist, orthodontist, prosthodontist, and psychologist. Perhaps your first thought may be that such a starry list of specialists assembled to join in the treatment of a child with a cleft lip and palate indicates over-specialization, but each one may be required at an appropriate period in the treatment to render the particular service for which he is specially trained, so that the final result may be as close to perfection of appearance, speech, and proper function of the teeth and jaws as is possible to obtain.

Let us take for example the case

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of baby BLANK who was born with a cleft lip and palate. The pediatrician is called and may have to arrange for a special method of feeding the child, who is not able to nurse satisfactorily. During the next eight weeks of life he adjusts the formula so that the infant receives and retains an adequate diet. Thus, at two months after birth the nutrition and general health of the baby is raised to such a degree that he will be able to withstand an operation to repair the cleft lip. This age period is chosen because best operative results are obtained with a negligible operative risk.

Following operation the child is fed with a special rubber tipped syringe to protect the healing lip as much as possible. Antibiotics are given to reduce the danger of infection in the lungs or other organs, and finally the baby is discharged from hospital two weeks later. With such expert pre- and post-operative care we are happy to be able to report that in over five hundred such operations we never yet lost a patient following operation. When the baby returns for follow-up care our geneticist, Dr. Clarke Fraser, obtains a careful history to learn whether other members of the family have suffered from congenital defects or if any particular illness or accident occurred while the mother was pregnant. I am sure you are all aware of the fact that measles occurring in the first three months of pregnancy has been thought to be responsible for the occurrence of certain congenital defects, including cleft palate, in a definite percentage of these babies. It has also been reported that congenital defects appeared in a considerable number of babies born to two hundred women who were exposed to the effects of the atomic bomb explosion at Hiroshima, in the early stages of pregnancy. Indeed, it is possible to create a great variety of congenital defects in the offspring of pregnant animals exposed to X-radiation at various stages

of their pregnancy. Similar observations have been reported on pregnant animals exposed to deficiency of various vitamins and even hormones. At the Royal Victoria Hospital we have found that congenital defects, including cleft palate, can be produced in the offspring of pregnant mice by injecting cortisone for three or four days about mid-term of the pregnancy. However, as yet no practical application of these facts to pregnant women can be made in order to reduce the incidence of occurrence of cleft palate and other defects.

We do know, however, that there are definite genetic or hereditary factors which are of importance and enable us to state with a reasonable amount of accuracy, the chance which parents may run in having a second defective child when one has already been born with a cleft lip and/or palate. On the basis of one hundred families in which a genetic history was taken it was found that when either a parent or one child in a family was affected, the risk of an unborn child in that family having a cleft lip or palate was five per cent. When both a parent and one child suffered from a cleft lip or palate the risk of an unborn child being so affected increased to fifteen per cent. These factors will, I am sure, be useful to you in your practice when you encounter such patients who seek advice as to whether they should plan to have further children. Too frequently in the past they have been told that the risk was much higher or very much lower than it actually is. Furthermore, our statistics reveal that conditions affecting the mother such as bleeding or weight loss during pregnancy, acute illness, attempted abortion, and menstrual irregularities prior to pregnancy did not appear to be related to the occurrence of cleft lip or palate in the unborn child.

Consultation is frequently required with the Staff of the Dental Depart-

ment and the Otolaryngology Department of the Hospital for treatment of conditions affecting the teeth, sinuses, and ears. A large percentage of these children suffer from extensive caries probably due to the habit of mouth breathing or malformation and malpositioning of teeth. This is probably due in part to inadequate care but there usually is defective formation of the enamel of the teeth which predisposes to the development of tooth decay. Accordingly, dental examinations are carried out three or four times a year and new cavities are filled as soon as possible. When deciduous teeth have been extracted space retainers of various types are inserted to encourage normal development of the jaws. Because of the open cleft in the palate which permits passage of food into the nasal cavities with subsequent infection, the tonsils, sinuses or eustachian tubes may be involved in an inflammatory process. Examination and treatment of these conditions are carried out by the otolaryngologist which not only benefits the general health of the child but may prevent loss of hearing which often results from chronic otitis media. The dentist should be observant of discharge from the ears or loss of hearing of these patients when spoken to in an ordinary conversational voice, and refer the child to an otolaryngologist promptly for examination and treatment. If marked loss of hearing has occurred it may be necessary to provide a hearing aid so that the child will be able to differentiate sounds and thus improve his speech.

The Speech Therapy Department under the direction of Mr. Robert Sparks and his assistants performs an invaluable service in minimizing or completely correcting the cleft palate type of speech which is often present even after successful surgical repair of the cleft palate. Defective speech often remains after operation because of underdevelopment of the palatal

muscles, or inadequate closure of the oronasal sphincter. In our Clinic and in the majority of organized clinics in Canada and the United States the cleft palate is repaired at about two years of age. This period is chosen for the following reasons:

1. The palatal tissues are sufficiently well developed to permit a successful operation in a high percentage of cases and without operative mortality.
2. The child is just beginning to learn how to speak at this time and poor speech habits have not become firmly established.
3. It is desirable to close the abnormal passage between the mouth and nasal passages at as early an age as possible which will not unduly increase the risk of a poor operative result.

At about four or five years of age when the palate has been repaired the speech therapist records the type and character of any speech defects which may be present. These may be due to inadequate development of muscles of the soft palate or scar tissue which prevents the soft palate from closing up the passage to the nose so that a characteristic "nasal twang" is present. Movements of the lip may be impeded by scar tissue following surgical repair and interfere with the proper articulation of such letters as "W" and "O." If the upper incisor teeth are malposed or missing sounds which are made with the tip of the tongue just behind the teeth are very difficult to pronounce. Following correction of the structural defects exercises, which include blowing up balloons, blowing out candles or blowing small boats about a tank of water, are employed. Specific exercises to improve the mobility of the tongue and lips are also used. The interest of the child is stimulated by resolving the speech therapy lesson into a series of games or play by the use of toys, picture books, and so on. As the child becomes older, tape re-

cordings of his speech are made and played back so that he may listen to the errors which he has made and learn to correct them. The mother is encouraged to attend the lessons so that she can assume the responsibility of continuing practice and training of the child at home. Our Clinic is bilingual—speech therapy is conducted in both English and French.

One of the most important problems with which we are confronted in caring for these children is that of orthodontic treatment. Because of the cleft in the palate which separates the alveolar process in the region of the upper incisor teeth quite frequently some of these teeth are either missing or erupt in malocclusion. In some cases there is underdevelopment of the maxilla due to formation of scar tissue following surgical operation, which interferes with forward growth of the lower jaw, and a condition of pseudo-prognathism develops. The orthodontist, whose specialty involves a study of the growth of the development of the face and jaws and functions related to these structures is able to provide an invaluable service to these patients. In some instances where it is necessary to maintain space or where a permanent upper lateral tooth is missing, bands are applied to the adjacent teeth and connected with a wire until such time as a bridge or prosthetic appliance may be inserted. It is frequently necessary to expand the entire maxillary arch and bring the incisor teeth anteriorly to establish correct occlusion. Early consultation with the orthodontist is advisable and treatment is instituted when indicated. Prompt therapy in cases of maxillary underdevelopment will help to stimulate forward growth of the maxilla, while in patients with protrusion of the upper teeth, it will facilitate normal function. The problems encountered are frequently most complex and treatment must often be continued for

a number of years before the final result is achieved.

Treatment of these malocclusions is difficult and fraught with danger. Very gentle forces are indicated with slow movement of teeth to avoid loss of bone. There is also some danger in overtreating the malocclusion and of moving a tooth into the area of the cleft where there is no bone. Sound clinical judgment is necessary and a compromise treatment with the addition of a prosthetic restoration may be advisable. In complicated cases, consultation with more experienced operators might be advisable. Many of the orthodontists in Montreal have generously contributed their services in aiding in the rehabilitation of these children and it is a pleasure to have this opportunity of thanking them before this meeting. The tremendous improvement in facial contour, functional occlusion, and improved speech bears witness to the important contribution of these specialists.

The majority of patients who come to the Clinic for the first time are found to have extensive caries of the deciduous and permanent teeth and not infrequently have already had numerous extractions. The Staff of the Dental Department under the direction of Dr. Arnold Mitchell has been most co-operative and helpful since the beginning of the Clinic. When a large number of teeth are involved in small children these are admitted to hospital, and under general anesthesia all dental fillings and operative work required may be completed at one stage if possible. Subsequently, if a number of teeth are missing partial dentures are constructed to provide adequate replacement to improve mastication and act as space retainers until permanent teeth erupt. Occasionally patients come to us who have had a number of operations upon the cleft palate which failed to heal and a large scarred defect remains which will not respond to surgical treatment. In these

instances the best method of treatment is the construction of an obturator which will close the abnormal passage between the mouth and the nasal cavities and overcome the speech defect by providing an artificial soft palate. Very gratifying results have been obtained with the help of Dr. Douglas Armstrong, who has taken a particular interest in this type of prosthetic appliance.

The psychologist contributes to the mental well-being of the cleft palate child, who at an early age may be pampered or overprotected by his parents on the one hand, or exposed to complete or partial rejection as if he were a skeleton in the family closet. When such unfortunate conditions have developed the psychologist contributes to the team work of the Clinic and is able to mitigate the psychic harm done to the child by re-education of the parents so that the child is encouraged to accept the fact that he has a cleft palate and that correction is possible. It is important also to explain the situation to the teacher so that proper guidance and development of his ability may be established. With this stimulation he is taught to be self-reliant and join with his playmates in the activities of the classroom and at play. In some instances, when the child is older, complexes may develop as a result of abnormal development of the nose or appearance of the lip. At this time secondary plastic operations may be carried out to improve these defects and subsequently eliminate a feeling

of inferiority.

Many children who live in rural areas cannot attend the Clinic regularly and for this reason a Summer Speech School was started so that during the summer holidays a month of intensive speech therapy could be arranged. With the aid of medical social workers attached to the Clinic it was possible to arrange for accommodation in the Julius Richardson Convalescent Home where this group of children received several lessons daily. This project was aided financially by contributions from various service club organizations.

Dentists can help this work in several ways:

1. By examining the teeth of cleft palate children three or four times a year and filling all cavities however small.
2. Avoid extraction of deciduous teeth if at all possible. If any of these must be extracted, insert some type of space retainer to avoid crowding of permanent teeth.
3. Use any methods of combatting dental caries of teeth that you consider worthwhile, such as a well balanced diet, brushing teeth after meals, frequent prophylactic treatments, local sodium fluoride applications, etc.
4. If you have a patient with cleft lip or palate, whom you believe is not being adequately rehabilitated, refer him to a cleft palate centre for advice.

Additional reductions in absenteeism and substantial saving of teeth for the average worker, can be achieved by a service which also provides dental health education, dental examination and referral to private dentists of cases needing corrective or restorative treatment.

The nation's teeth need 700 million fillings, according to figures compiled by the American Dental Association.

It would take five times as many dentists as we now have to catch up within a single year with this backlog of needed fillings. These figures do not include needed extractions, crowns, bridges, dentures, examinations, X-rays, cleaning, fluoride applications and other dental services.

ABSTRACTS

Penetration of radiocalcium at margins of acrylic restorations made by compression and non-compression techniques.

by R. E. SAUSEN, D.D.S., W. D. ARMSTRONG, M.D., Ph.D. Minneapolis, and W. J. SIMON, D.D.S., M.S.D., Iowa City

Journal of the American Dental Association, Dec. 1953.

The most exacting and convincing device being utilized in investigations in the perfection of the marginal seal is the radioautograph by which the detection of a single radioactive molecule with a resolution between molecule images of 2 or 3 microns is possible. Since it has been shown that radiocalcium can penetrate enamel defects and lamellas, then this radioactive molecule can play a natural role in testing the marginal seal of any dental filling material.

Armstrong and Simon demonstrated

that radiocalcium in solution can penetrate at the margin of any filling material; that there appears to be less penetration at the margins of amalgam restorations; also that the seal of the acrylic resins can be somewhat different depending on how the material is manipulated. In an effort to make this study more complete, a further series of similar tests has been done with acrylic resin specimens, using both the compression and noncompression (brush-on) techniques. The conclusions of the experiment are as follows:

1. In time calcium ions will penetrate any acrylic resin margin, regardless of the brand of resin or the technique used for the restoration.

2. Brush-on acrylic restorations have a marginal seal more impermeable to calcium ions than acrylic restorations prepared by the compression technique.

3. There is no penetration of calcium ions into the mass of acrylic material.

Orthodontics and Child Psychology

by SAM BLAUSTEN, D.D.S.

New York State Dental Journal.

With the ever increasing role that psychology and psychiatry are playing in medical therapy, we have been well aware of the value of this field of medicine. Personality derangements and changes are being met with and corrected so that no longer is a person with a mental aberration looked upon as an untouchable. Early treatment

has yielded excellent results and it is with such thought in mind that the dentist can enter into the picture.

A deformity in dentition may at times result in personality changes, changes which could be avoided. This, of course, calls for early treatment.

The inevitable question "At what age should orthodontic treatment be undertaken?" is often asked. Wide divergences of opinion are expressed, with some orthodontists not starting a case until all deciduous teeth have been lost, while other practitioners believe in treating mixed dentition cases.

Untreated malocclusion in mixed dentition very often creates an orthodontic problem. However, there are instances where an untreated mixed dentition may even become more than just an orthodontic difficulty. Such cases may become the forerunner of psychological disturbances.

The dentist should recognize that certain types of malocclusion should be treated early because of the personality

effects involved. Empirically stating that all cases should wait until the entire permanent dentition is present, may result in great harm to the child's emotional and mental development. Orthodontics has an important influence not only in the physical development of the child but, in many cases, may have a decisive influence in the emotional and mental development as well.

The Medical Officer Looks at the Dental Public Health Program

by I. W. C. STURGEON, M.D., D.P.H., Director,
Welland & District Health Unit, Welland, Ontario.
Canadian Journal of Public Health, October 1953.

On September 1, 1946, a dental public health program was inaugurated in the Welland and District Health Unit. The Ontario Division of the Canadian Red Cross Society supplied the funds, and the program was under the supervision of the Dental Public Health Committee of the Ontario Dental Association.

The Ontario Division of the Canadian Red Cross Society made no stipulation, at any time, as to the nature of the program. This was left to the discretion of the Public Health Committee and the local board of the Health Unit. The advantage of such an arrangement was that at no time were we subject to local pressure to institute a program of expediency because financing was being supplied by local taxpayers. The program could thus evolve in an orderly manner, based on fact, not tradition nor the opinions of uninformed persons.

SUMMARY

In summary, having looked at a dental public health program for five years, I can state that:

1. The efforts of a voluntary organization, the Ontario Division of the Canadian Red Cross Society, have made a splendid contribution towards the development of a well-planned program aimed at improving dental health. The

advantages of a voluntary organization, compared to an official body, in the early stages of any program, have been pointed out.

2. A dentist trained in dental public health, should be an integral part of the staff of all health departments, and his program should be integrated into all the public health activities. Where one is not available, the alternative would be a dentist employed on a regional basis, serving several health departments. Dental hygienists could be employed as well as auxiliary personnel.

3. Specific preventive measures, such as fluoridation, are necessary to deal adequately with the whole problem of dental disease.

4. Public health education, using auxiliary personnel, is essential in the early stages of the program and should be continuous.

5. The problem of dental treatment for the total population, regardless of their financial ability to pay for it, has not been solved in the program outlined. This might be dealt with if health departments established treatment programs confined to the earliest age groups. Such programs should be assumed by the dental profession as early as possible.

6. The costs of dealing with dental disease are out of all proportion to the total cost of keeping healthy. The general public is looking for relief and turning to prevention as a logical solution.

Climate and Controlled Fluoridation

by DONALD J. GALAGAN, D.D.S., M.P.H., San Francisco.

Summary of the Article appearing in the Journal of the American Dental Association—August, 1953.

The application of a biological index, endemic dental fluorosis, supported in part by another index, dental caries experience, in two groups of children exposed to different environmental conditions indicate that climate is an influential factor in the water consumption of infants and children.

The data suggested that children born and raised in areas with a mean

annual temperature of 70°F. consume approximately twice as much water as children living in areas with a mean annual temperature of 50°F.

3. It is suggested that temperature is the most important element of climate environment, and that mean annual temperature is the most practical measurement of climatic conditions available at the present time.

4. Fluoride concentration should be adjusted to climatic conditions. One to 1.2 ppm. of fluoride may be considered optimum in zones comparable to the Great Lakes area, whereas 0.6 ppm. may be considered equally effective in areas similar to Southern Arizona.

Fractures of Dental Origin

by ERWIN C. LUBIT, D.D.S., Brooklyn, N.Y.

The New York Journal of Dentistry, Vol. XXIV, No. 1, Jan. 1954.

All fractures should be managed within the general concept of eight basic considerations.

1. The patient should be given general treatment at the time that he is first seen. The patient may be in shock, have pain, or be haemorrhaging. These conditions require immediate attention.

2. The soft tissues surrounding the site of the fracture are usually bruised or lacerated. The wounds should be cleansed, medicated, and sutured, if necessary.

3. The patient should receive a very careful examination, clinically and radiographically. The patient who has been in an accident, or has been badly beaten up may have more than one site of fracture. It is very easy to spot the fractured mandible with a tremendous amount of displacement, but the same patient may have a fractured condyle which may go unnoticed unless a careful examination is made at the very onset of treatment.

4. The type and location of all fractures should be determined. Good treatment depends upon a sound diagnosis.

5. Infections should be treated, or in their absence, preventive measures should be instituted. In most cases, the antibiotic of choice is penicillin. An intramuscular injection of three hundred thousand units of penicillin daily for at least five days is an excellent prophylactic measure. In the presence of an infection, larger doses may be given.

6. Temporary immobilization should be secured. This can be done by means of a Barton bandage, or two face masks tied together, or a large piece of rubber dam. The purpose of this is to prevent the patient from using his jaws and having the muscles pull against the fractured segments causing further displacement of the parts, and injury to the surrounding tissues.

7. The anaesthetic of choice for the reduction and fixation of the fracture must be determined. If a local anaesthetic is used, the patient must be heavily sedated in order to obtain sufficient muscular relaxation to reduce the fracture. I usually prefer $\frac{1}{4}$ gr. morphine with 1/150 gr. atropine. The

two have a synergistic action, and the atropine controls salivation.

8. All fractures are treated by their reduction and fixation. By reduction,

we refer to the bringing of the fractured segments into apposition. By fixation, we refer to the means of immobilizing the fractured segments until they heal.

A Serial Study of the Effects of Finger-Sucking

by ALLAN T. RUTTLE, D.D.S., M.S., WILLIAM QUIGLEY, D.D.S., M.S., JOHN T. CROUCH, D.D.S., M.S., and GEORGE E. EWAN, D.D.S., M.S.

Journal of Dental Research, December 1953.

The maxillary arch form is modified in thumb and finger suckers by elongation of the anterior segment. This acts to produce spacing, labial inclination, and protrusion of the maxillary incisors. There is a definite opening action in the anterior region. True and apparent overjet are increased strongly, although apparent overjet shows a tendency to increase in the nonhabit, as well as the habit, series.

Sucking habits act in opposition to any inherent tendency for a transition from maxillary deciduous anterior spacing to crowding of the permanent

anterior teeth. This effect is not evident in the mandibular anteriors.

The frequency of distortion of the maxillary arch width at the permanent canine level is limited. In a few cases, however, where a distortion does occur it progresses to a rather marked degree.

Modification of the mandibular arch width at the deciduous first molar and the permanent first molar merely approaches statistical significance. Clinical utility of this fact, however, is questionable.

Maxillary arch width, with the infrequent exception of the permanent canine area, is unaffected.

Contrary to most publications, the effect of thumb and finger habits on the molar occlusion merely approaches statistical significance, and does not attain clinical utility.

Production of roentgenograms by x-ray radiations obtained from radioactive x-ray emitters.

by HARRY D. SPANGENBERG, Jr., D.D.S., M.S.D., and M. L. POOL, Ph.D., Columbus, Ohio.

Journal of the American Dental Association, Dec. 1953.

Experimental roentgenograms of a skull have been made by using a small radioactive x-ray emitter as a source of x-rays. The small intensities of x-rays produced do not permit of its clinical use at present. It is a distinct probability, however, that further in-

vestigation will lead to the discovery of other radioactive x-ray emitters which will produce an x-ray beam of sufficient intensity and of proper wave length and one which will have a long enough half-life to make possible its clinical use as a source of x-ray radiations. Since such sources are minute, they may be placed within any cavity of the body in order to obtain roentgenographic visualizations heretofore impossible. Furthermore, the minute radioactive x-ray source, the shielding equipment and the interval time exposure device, is so small and light in weight that it is readily transportable.

Dental Caries — *its modern control*

by ROBERT G. KESEL, M.S., D.D.S.

Illinois Dental Journal, December 1953.

Evidence continues to accumulate that acids play a dominant role in the development of cavities in teeth, and this evidence can be divided into dietary, chemical, and bacteriologic, as well as clinical factors.

Considering the dietary factor, evidence is still arriving from all over the globe correlating the incidence of caries with sugar consumption. Roughly there is a proportional relationship between the amount of refined carbohydrates consumed and the caries experience of those various population groups. There is good evidence to show that the local action of the fermentable carbohydrate in the oral cavity is necessary for caries production.

From the chemical viewpoint, there is good evidence to show a definite relationship between acid production, after the mouth is rinsed with a sugar solution, and the degree of caries activity.

Respecting the bacteriologic evidence, it is sufficient to say that more and

more evidence is accumulating to show that micro-organisms, which thrive in an acid environment and can ferment glucose rapidly, are the ones associated with the carious process, but to date no one has been able to come up consistently with any organism proteolytic in character that is associated with caries activity.

If we assume the concept that acids are important in the production of cavities, immediately there are several ways available for reducing or controlling tooth decay. Regulation of the intake of fermentable carbohydrates and the production of a tooth tissue more resistant to the attack of caries (through use of the fluoride ion) are effective measures. Oral hygiene, the removal from the mouth of fermentable material before it has an opportunity to be converted into acid, should be helpful as a caries control procedure. In addition the various bacterial inhibitors and acid neutralizers that have been under study and finally enzyme inhibitors (chemicals which would prevent fermentation while the fermentable material is in the oral cavity) also should be of aid. These five or six methods are presently being studied as preventive measures for caries control.

Some Aspects of Root Canal Therapy

By DEMETRI D. ARIS, B.S., B.A., M.Sc., D.D.S.,
Minneapolis.

The Minneapolis District Dental Journal.

Many failures in root canal work in the past were the result of careless operating. Incorrect diagnosis, lack of close attention to detail and inadequate sterilization were no doubt also contributing factors. Today there is also a possibility that we may be relying too much on the use of antibiotics instead of giving nature enough time to effect her own cures.

We must not minimize the importance of adequate mechanical preparation, sterilization, bacteriological examination as well as the proper filling of the root canal itself. Successful root canal therapy can only be accomplished if the canal is opened through the apical area.

Pulpless teeth should not be treated for patients suffering diabetes, tuberculosis, syphilis, or any other active infectious disease not under control. Careful operative procedure with correct diagnosis is of paramount importance. Ample consideration of the bone factor, oral as well as systemic manifestations, age, general health,

family history, inherited susceptibilities will all aid us in selecting cases that will result in favorable recovery.

With proper rubber dam application, sterilization of the operative field, dressings and proper equipment, we can proceed to open the pulp chamber without mutilating the tooth and yet obtain free access to the horns. Proper sterilization of the tubulic, the denuded cementum, the canal and apical tissues should always be kept in mind. Making use of scientifically correct cultural methods and thorough filling of the root canal should be the aim of every root canal therapist.

Some research workers have successfully proven that there is a deposition of newly formed cementum over dead cementum, sealing the apex. Most of these investigators have ample evidence showing the regeneration of periodontal membrane around these root ends. Clinically and microscopically we see complete healing and repair following correct root canal therapy.

When removing the vital pulp and treating the root canal, connective tissue is gradually formed. This is followed by deposition of cementum

which obliterates any spaces left after the root canal is filled. In root resections after the canal is filled, the area of bone around the apex is replaced. The periodontal membrane also regenerates, a deposit of cementum takes place and fibrous connective tissue covers the end of the gutta percha cone.

Since the peridontium is entirely separate tissue from the pulp, its blood and nerve supply is not disturbed by the removal of pulp tissue. Peri-apical tissue can and does heal when infected by a necrotic pulp if proper root canal therapy has been carried out.

Clinically and roentgenographically, it has been proven that pulpless teeth can be safely retained if properly treated. There is positive evidence of bone recovery, absence of local discomfort, inflammation or general reaction. Conservatively minded men in the research field contend that the periapical tissues have great recuperative powers of repair. By making use of scientific methods of treatment, including the use of antibiotics, when indicated, the dentist today can practice better root canal therapy.

Caries-like Enamel Changes by Chemical Means

by F. C. BESIC, D.D.S.

Journal of Dental Research, December 1953.

Typical macroscopic characteristics of true caries of human enamel appear to have been duplicated in vitro by the action of a number of acid solutions containing calcium and phosphate ions

in less than maximal concentration.

The same acid solutions with low concentrations of calcium and phosphate ions produced on enamel surface changes which do not resemble natural caries.

The same acid solutions with maximal calcium and phosphate ion concentration (in some cases at pH 3.58) appear to produce no effect on enamel in vitro.

RESEARCH

FOREFRONT OF CANADIAN DENTISTRY

Through the co-operation of the Research Committee of the Canadian Dental Association, abstracts of Research papers emanating from Dental Research performed in Canada, but published in Journals other than the Journal of the Canadian Dental Association, will henceforth be made available to our readership.

Ed.

The Motile Non-Sporulating Anaerobic Rods of the Oral Cavity.

J. B. MacDONALD, (Division of Dental Research, Faculty of Dentistry, University of Toronto).

Published as a monograph by the University of Toronto Press, 1953.

Nineteen strains of Gram-negative non-sporulating motile rods were isolated from inflammatory processes of the oral cavity. They were isolated directly from blood agar streaks, from the migrating edge of confluent mixed growth or from a haze penetrating the agar in spirochete cup-plates.

The strains were divided into three groups on the basis of morphologic criteria. Group I strains were slender rods about 2 to 8 microns long, many of which exhibited a very rapid back and forth darting motility. Electron microscopy disclosed one or two terminal flagella. Group II strains were slender fusiform rods 4 microns to more than 100 microns in length. Cells were flexible and exhibited a lashing motility around a fixed pole. Slow gliding motility was observed in 3 strains but electron microscopy failed

to disclose flagella. Group III strains were thicker and longer than those of Group I. They appeared as single curves or spirals with up to 15 curves. They were peritrichously flagellated.

Strains of Group I produced characteristic small colonies on blood agar anaerobically in 5 days. Growth was light in thioglycollate broth and enriched veal infusion broth. Strains of Group II produced grey depressed colonies after 3 days' growth on blood agar plates containing 1% agar. On 3% agar plates the strains grew as spreading granular greyish translucent surface films about 3 mm. in diameter. They grew well in a variety of enriched fluid media. Group III strains grew as surface colonies only if placed in a reducing environment immediately after being subcultured. In thioglycollate broth they produced a heavy growth of floccules and coarse granules in 2 days anaerobically.

The strains tested showed little sensitivity to changes in temperature of incubation, addition of carbon dioxide, or variation in pH of medium. All strains grew at 37°C. and at pH 7.2.

Group I strains failed to grow in

thioglycollate shake tubes. Group II strains grew best in a sharply defined plane below but close to the surface of the tubes. Group III strains grew to within 10 to 15 mm. of the surface of the medium. Groups II and III lowered the pH of 3 carbohydrate-containing media and produced acid from litmus milk. They did not produce hydrogen sulphide but Group I strains did. None produced indol.

Agglutination studies using somatic antigens demonstrated low titre antisera and cross-reactions among 4 strains of Group I. Strain-specific antibodies against flagellar antigens were demonstrated. Group II strains produced low titre antisera which agglutinated the homologous antigen only. Somatic antigens of the two strains of Group III were not distinguishable by means of agglutinin absorption. Flagellar antigens were not identical.

None of the 3 groups produced

harmful effects in guinea pigs subcutaneously or mice intraperitoneally, nor did Groups I or II harm rabbits intravenously. Cultures of Group III strains in thioglycollate broth or supernatant from cultures killed rabbits in a few hours. Some protection was afforded by an antihistaminic drug. Death was thought to have been due to an anaphylactoid reaction.

Group I organisms resembled a vibrio described by Tunncliffe (1914) and named *Vibrio sputorum* by Prevot (1940). It is proposed that this name be retained. Group II strains correspond to *Fusocillus girans* (Prevot, 1940). It is proposed that the generic name *Fusocillus* be discontinued and that *Fusocillus girans* be renamed *Fusobacterium girans*. Organisms similar to Group III have been described under a variety of names. The name which has priority and seems most appropriate is *Spirillum sputigenum*.

*Motility in a Species of Non-flagellated Bacteria.**

by J. B. MacDONALD, M. L. KNOLL and R. M. SUTTON (Division of Dental Research, Faculty of Dentistry, University of Toronto).

Proc. Soc. Biol. Med., 84:459, 1953.

Though there has been dispute concerning the role of flagella in bacterial motility, flagella have been found on most motile bacteria when examined under the electron microscope. Exceptions include members of the genera *Beggiatoa* and *Thiothrix* and of the order *Myxobacteriales*, in which creeping on a solid substrate has been described or in which flexible cell walls have been observed. In *Fusobacterium girans*, described in detail elsewhere, motility which appears to be

independent of flagella, creeping and flexibility, has been observed in a fluid environment.

Progressive gliding motility, lashing around a fixed pole, and flexion were found in five strains of *Fusobacterium girans* when examined in fluid suspensions by darkfield microscopy. Electron, phase contrast, and polarized light microscopy failed to reveal flagella on these organisms. The presence of a slime layer was indicated by electron microscopy, and by the use of India ink preparations. Motility apparently was not affected by the addition to the medium of either "Tween 80" or alkylated aryl sulphonate. Motility was inhibited in the presence of specific anti-serum. No explanation is offered for the mechanism of motility in *Fusobacterium girans*.

The responsibility of a national organization in the promotion of a public health measure

Since the resolution endorsing fluoridation as a sound public health procedure was given official approval by the Canadian Dental Association, certain problems were immediately created respecting the role the Association must play in the inevitable promotion of such a measure. Probably the three standing committees most concerned are Research, Dental Public Health and Public Relations.

The Research Committee is responsible for the collection of factual information only. The Committee must be completely impartial in its acceptance or rejection of data by judging the information presented purely on the scientific basis of its acquirement. The Committee, too, must be able to interpret the results of research for the benefit of those who are engaged in other aspects of the profession and perhaps have neither the training nor specific academic qualifications necessary to arrive at certain conclusions.

The Dental Public Health Committee, once being possessed of the factual information must incorporate the dental health measure into its program in the same manner as it would enunciate the value of nutritional requirements, adequate oral hygiene, and early and regular dental care.

The Public Relations Committee, if it takes as its formula the equation shown a few months ago in the pages of this Journal, $x + y = \text{Public Relations}$ where x is the product (in this instance fluoridation) and y is the interpretation, must be sure that the general public places the correct interpretation upon the actions of the Association. Herein lies a major difficulty. On the one hand is the very definite responsibility of the Association to urge the acceptance of the procedure because of the proven dental health benefits, while on the other is the fact that the Canadian Dental Association is a national organization and therefore has no justification for the promotion of the measure other than on that level. From this it can be seen that a great responsibility falls upon the provincial district or community societies to encourage the adoption of fluoridation in the areas in which they have specific jurisdiction. The Canadian Dental Association stands ready at all times to supply *upon request* all available factual information. It cannot, however, assume responsibility for imparting that information when that responsibility more correctly belongs to others.

A case in point was revealed recently when a daily newspaper with an extremely large circulation took the Association to task for the use of what it termed "gobbledygook" in the concluding statements of the brochure "Facts on Fluoridation" prepared by the Research Committee. This newspaper, having supported fluoridation editorially, felt called upon to criticize the Association in no uncertain terms. Following an excerpt from the brochure, the paper commented as follows: "A positive conclusion can be dug out of that mass of verbiage, but it takes some digging. By lapsing into officialese and gobbledygook, the association confuses an issue it meant to clarify. It will not win the public over to fluoridation with that kind of language. The foes of fluoridation do not hesitate to use strong and simple words in fighting this proposed advance in public health.

The facts supporting fluoridation are forceful; the dental association's language should match them."

The point that this newspaper overlooked, although being perfectly aware of the straightforward statement approved by the Association, was the obvious fact that the terms of reference of the Research Committee—or any Committee as a matter of fact—make it impossible for the Committee to enunciate official Association policy without ratification by the Board of Governors. The Board, in effect, by its adoption of the resolution ratified the findings and interpretations of the Research Committee.

The brochure, in actuality, is not designed to promote fluoridation, but admittedly there is a fine line between factual presentation and promotion when such an overwhelming body of proven scientific data points to the desirability of instituting such a procedure.

It remains, then, for each dentist in Canada to become completely familiar with the basic scientific information available, to be able to express himself when called upon and to take the lead as an individual when necessary in encouraging the adoption of fluoridation in his own community.

Book Reviews

Periodontology by Frank E. Beube, D.D.S.

Published by The Macmillan Company, New York, 1953. Price: \$15.00. Pages 752.

In the most recent book on Periodontology by Dr. Frank Beube we have a splendid volume which should prove of untold value to the student, the general dentist and the periodontist.

It is difficult to cover the twenty-six chapters, with over five hundred illustrations, in a short review. The author has prepared a stimulating and easy to follow text. It is concise, clearly written, covering every phase of periodontology (etiology, pathology, diagnosis, therapy, etc.).

Each chapter contains an outline which is of great help in locating the material one is most interested in, and the tables, references and suggested reading at the conclusion of each chapter enables the reader to gain a fund of knowledge.

The coverage of periodontal problems is excellent in its clarity, sound basic approach and general evaluation. Each chapter tells a complete story, placed in sequence to enable even the student to follow periodontal procedure easily. The chapter dealing with the splint and wire ligation which is so important in mouth rehabilitation is very well described. This I consider of great importance.

In conclusion the reviewer feels that Dr. Beube should be congratulated on the splendid manner in which he has presented this volume with so much useful information. Every dentist should read and carefully study this text. This would enable him to gain a greater perspective as to the value of periodontia and would help in the preservation of many teeth needlessly sacrificed.

G. L. PLANT.

Accepted Dental Remedies 1954. Published by the American Dental Association. Pages: 208, including a general index, a distributors index, index to current reports from the Chemical Laboratory and the Council, and an index to more recent reports on products not included in accepted dental remedies. Price: \$2.00.

This excellent annual publication of the American Dental Association, designed to serve as a hand-book of dental therapeutics, is once more available to the dental profession. Among the new features of this 19th edition is a monograph on Trichlorethylene, a revised bibliography of therapeutic agents, a section on oral dentifrices and mouth washes in dental hygiene, and the latest revision of the provisions for acceptance of products by the Council of Dental Therapeutics of the A.D.A. This reference book is an invaluable adjunct in the practice of dentistry, and should form a part of the library of any practitioner. W. J. D.

The Association

The Generous Action of the Dental Council of Canada

The Dominion Dental Council was born at the first meeting of the Canadian Dental Association held at Montreal in 1902. Of recent years the name of this body was altered to The Dental Council of Canada. Examinations were conducted over a period of half a century and certificates were issued which were recognized by most of the provinces for licensing purposes.

One of the stated terms of reference for the Council on Dental Education, Canadian Dental Association reads in part "To develop a satisfactory plan for a National Examining Board . . ." As a consequence the Council on Dental Education endeavoured over a period of ten years to develop a formula for such an examining board which would prove acceptable to all provinces. This objective was finally achieved and the National Dental Examining Board was incorporated by Federal statute, June 1952.

Immediately following incorporation of the new Board, the President of the Dental Council, Dr. H. Freeland of Calgary, generously offered on behalf of his Council to facilitate the formation of the new National Board in every possible way. In view of the time necessary to organize the new Board the Dental Council agreed to carry on for one year.

In the meantime the National Dental Examining Board became organized with Dr. H. N. Beach of Ottawa as Secretary. Statement was made that the new Board would be in readiness to conduct examinations in the Spring of 1954. Upon the receipt of this information the Dental Council of Canada called a special meeting at the time of the C.D.A. meeting held in Montreal last October. At the Association Annual Meeting, Dr. R. O. Winn of Kitchener, now President of the Dental Council of Canada, presented the following statement as a result of the deliberations of the Council:

1. The Executive and Members of the Dental Council of Canada, meeting in final session of the Council at Montreal, October 19th, 1953, respectfully present the following statement:
2. It is a singular coincidence that although the first formal meeting of the Dominion Dental Council, known during the past several years as The Dental Council of Canada, took place in Toronto on September 10th, 1904, it was here in the City of Montreal, on September 16th, 1902, that the first organization meeting of the Council took place. The operations of the

Council may therefore be said to have covered the period of approximately half a century in the life of our nation.

3. The objective in mind at the time was the promotion of a central organization under the control of the Dental Profession of Canada, to erect and maintain a standard of ethics and dental education for the profession, and to issue certificates of qualification to candidates who passed the examinations conducted by the Council.
4. The past fifty years have been eventful for both our nation and our profession. Due to the complex and widely varying problems and attitudes of mind confronting the leaders of our profession in the far-flung provinces of our Dominion, which have been and are common to all political, professional and business bodies functioning in Canada, it was not possible, despite continuous effort toward that end, to achieve the required unanimity of purpose necessary to enable the Council to acquire incorporation on a national basis. In spite of that, however, a notable service has been rendered the Dental Profession by the Council over a period of half a century.
5. It is interesting to note that during the past fifty years 1,930 certificates of qualification have been issued by this Council.
6. A financial contribution to the welfare of the whole Canadian profession has been made in the form of a donation of \$5,000.00 to the Research Committee of the C.D.A. and a further contribution of \$7,000.00 to the promotion and development of the National Dental Examining Board of Canada.
7. The members of the Dental Council have noted, with much satisfaction, the efforts of the Executive of the C.D.A. over the past several years, directed toward the organization of a National Examining Board that might enjoy complete national status. The recent announcement of the attainment of that objective has been received with pleasure, not only by the members of the Canadian Dental Association in general, but by the members of the Dental Council, in particular. We are proud also of the selection of Dr. Howard J. Merkeley, one of our Council members, as the first President of the National Dental Examining Board of Canada.
8. In keeping with the policy of the Dental Council since its inception, which has been to further the best interests of the Dental Profession at all times, and as further evidence of the good will of our organization which has today concluded its services to Canadian Dentistry, the following motion has been proposed and unanimously adopted by the Council:

BE IT RESOLVED by this body, the Dental Council of Canada, as the final item of business to be recorded on the books of the Council, that the assets of the Council be disposed of as follows:

1. That certain physical assets valued at approximately \$1000.00 be donated to the N.D.E.B.
2. That the records and books of the Council be given to the Secretary of the National Dental Examining Board of Canada for filing.

3. That the remaining financial assets of the Council, amounting to approximately \$5,000.00 be donated to the National Dental Examining Board.

9. And,

BE IT FURTHER RESOLVED by the members of the Council in complete agreement, that we record here our happiness and confidence in laying down the responsibilities that have been ours for half a century and our determination to lend our full support as individuals to the Executive and members of the National Dental Examining Board of Canada in all its operations for the good and welfare of Dentistry, and that copies of this resolution be handed to the Officers of the National Dental Examining Board and to the Executive of the Canadian Dental Association.

Following the presentation, Dr. Winn presented Dr. Howard J. Merkeley, President of the National Dental Examining Board with the securities held by the Council.

Dr. Merkeley made reply:

"It is my privilege, on behalf of the National Dental Examining Board, to accept the very generous gift and good wishes from the Dental Council of Canada.

For almost half a century the Dominion Dental Council, more recently known as the Dental Council of Canada, has quietly and very efficiently discharged its duties. It has raised and strengthened the ethical status of our profession over a long period. A roster of

its officers is a "Who's Who" of Canadian Dentistry.

May I ask the members of the Dental Council to stand: Dr. Winn, Ontario—Dr. Brett, Saskatchewan—Dr. Freeland, Alberta—Dr. Peters, New Brunswick—Dr. Crosby, Nova Scotia—and Dr. McIntyre, Prince Edward Island, a Past President and member of the Council for twenty years.

These are the men who have made such a magnificent gesture of good-will toward the whole profession." (Applause.)

By their action the Council exemplified a true professional spirit in lending all possible assistance to the newly established Board. Announcement in respect to the activities of the new Board will be published in the Journal.

New Publication—

How to Brush Your Teeth

The Dental Public Health Committee has produced a new publication entitled "How to Brush Your Teeth." This folder is illustrated by photographs and line drawings showing the proper method to be used in brushing. The instructions are given in simple language. This publication should prove useful in explaining brushing technique to patients and in public health activities. Single copies will be supplied free on request. Quantities may be purchased at the rate of one cent per copy.

The Library

The Library of the Association consists of practically all the books related to dentistry which have been published during the last ten years. A considerable number of volumes published earlier are also available.

The Library has been made possible through the generosity of interested members of the Association. All monies received are used for the purchase of books. The Association bears the cost of administration.

For the benefit of members and all others interested, the library is open daily from 9.00 a.m. to 5.00 p.m. except Saturdays and Sundays. All dental periodicals are available.

Books may be borrowed by the membership by writing: Librarian, Canadian Dental Association, 234 St. George St., Toronto.

Additions to the Library

BARSKY, A. J. Principles and practice of plastic surgery. 1950. 499p. illus.

BAYER, L. M., and GREEN, E. Kitchen strategy. 1952. 112p. illus.

BYRD, O. E. Health instruction year book. 1952. 232p.

GROSSMAN, L. I. Transactions of the world conference on endodontics. 1953. 108p.

- HAUPL, K., GROSSMAN, W. J. and CLARKSON, P. Functional jaw orthopaedics. 1952. 408p. illus.
- KELLS, C. E. Three score years and nine. 1926. 563p. illus.
- LANDA, J. S. The dynamics of psychosomatic dentistry. 1953. 435p.
- McCARRISON, SIR R. Nutrition and health. Edited by H. M. Sinclair. 1953. 125p.
- SIDDLE, G. H. The technique of stainless steel work in mechanical dentistry. 1945. 81p. illus.
- TATTERSALL, W. R., and BARRY, H. D. The dentist's handbook on law and ethics. 1953. 328p. illus.
- THATCHER, V. S. History of anaesthesia. 1952. 812p. illus.
- WALKER, B. S., BOYD, W. C., and ASIMOV, I. Biochemistry and metabolism. 1952. 812p. illus.
- WHITEHOUSE, W. J., and PUTMAN, J. L. Radioactive isotopes; an introduction to their preparation, measurement and use. 1953. 424p. illus.

Correction:

In the additions to the Library which appeared in the December issue, one book was listed incorrectly.

The listing should read:

FENN, H. R. B., LIDDLELOW, K. P., and GIMSON, A. P. Clinical dental prosthetics. 1953. 502p. illus.

Committees and Councils

Dental Public Health

An article on Preventive Dentistry by Dr. Fish, of England, was sent to all chairmen and directors of Preventive Dentistry.

The need for cooperation between the dental profession and the provincial government was stressed, and a suggested agenda was submitted which might aid in bringing about this desired result.

Dr. G. T. Mitton of the Faculty of Dentistry, University of Toronto, with the help of Miss Andrée Hébert, in charge of Dental Hygienists' training at the University of Toronto, have prepared a splendid pamphlet entitled "Brushing the Teeth". This pamphlet may be obtained from the office of the Canadian Dental Association for one cent a copy.

A pamphlet on Fluoridation written for lay consumption has been prepared by Dr. Frank McCombie, Director, Division of Preventive Dentistry, Department of Health, British Columbia. This pamphlet is now published and may also be obtained from the Canadian Dental Association's offices.

The Canadian Broadcasting Corp. was contacted this year with the idea of having a coast to coast broadcast during National Health Week. Unfortunately they could not accommodate us this year.

A survey of all the provinces is being made to obtain the following information:

- (a) What dental education is now being taught in the schools of your province?
- (b) What grades are being taught dental health?
- (c) Who is teaching dental health?
- (d) What text books are being used?
- (e) Are Normal schools teaching their students to teach dental health, and how much are they being taught?
- (f) Would it be possible to procure for us a copy of your provincial curriculum or relevant parts of it, and the title of the books or other material used in teaching dental health?

Efforts are being made to have all the provinces take part in National Health Week, and to see that dental health is properly presented at this time.

A. J. Poyntz, Chmn.

Economic Security

What is the effect of the Agency System?

By E. L. R. WILLIAMSON, M.B.E., B.P.A., F.R.E.S.
Consulting Economist, and Administrator
of the C.D.A. Plan

In the previous article we saw that insurance is based on the equation:

$$\begin{array}{rcl} \text{Mortality} & - & \text{Interest Earned} \\ & & \text{by the Fund} \\ + \text{Cost of} & & \\ \text{Operation} & = & \text{Insurance Premium} \end{array}$$

From this we also saw that the cost of premium is the only variable factor since mortality is beyond human control, and interest earnings are equal for all practical purposes in the light of rigid control by law.

Insurance in the ordinary way is sold by the individual solicitation of an agent operating out of a Branch Office, which is under the direction of a Branch Manager. Larger branches have one or more Assistant Managers, a Cashier, and a clerical staff, as well as the corps of agents. Although a record is kept of policies issued through a Branch, and renewal premiums are accepted, no "underwriting"—acceptance or rejection of applications, maintenance of authoritative records, determination of premium rates, or payment of Claims, is done by a Branch Office. The selling of *new* insurance is its "raison d'être."

The chief item of expense in the Agency is, of course, commissions which are, on the average, 60% of the first annual premium to the agent, and 15% to the branch manager. In the second year, 15% commission is paid to the agent, 5% thereafter for another usually eight years. In casualty insurance (sickness and accident) the commission is 25 or 30% every year to

the agent for the life of the contract.

The Branch Managers and Assistant Managers receive salaries in addition to their own commissions for personal selling, and the "over-ridings" on their agents' sales. The clerical staffs are salaried, and there is also the expense for quarters and equipment. Additional expenses are for sales conventions, production incentives or prizes in addition to commissions (often very valuable), and advances to agents who leave the company before earning sufficient commissions to cover.

The proportion of total annual premium income which these Agency costs entail was given in the Editorial of the January issue of the Journal.

That these figures are quite consistent from year to year in established companies and that these companies are more efficient than the average, is demonstrated by the recent statement of a leading American underwriter writing in a trade journal and referring to the industry as a whole: "The expense ratio is very nearly the same as it was thirty-five years ago. In 1915, the ratio was 16.7%; in 1950, it was 16.8%."

These figures were taken from the most recent Annual Report of the Dominion Superintendent of Insurance, which is available to any individual on application to the Queen's Printer.

Selling insurance is hard, difficult work, which must be very well paid—most agents fail; that this is so is demonstrated by the figures of the Life Insurance Institute of America that the turnover in the agency force is 80% every two years: The chances are very much against your paying a second renewal to the agent who sells you a policy.

Insurance in Canada is sold as cheaply and efficiently as it can be sold under the agency system. The only way in which costs—and premiums, therefore—can be brought down is by changing the system.

The Corps

Lieut.-Col. T. L. Marsh has assumed command of No. 1 Field Dental Unit in Germany. The former Commanding Officer, Lieut.-Col. I. A. L. Millar is returning to Canada after completion of his tour of duty.

Major H. S. Lankin attended a course in Dental Radiology at the University of Toronto, from 30 November to 4 December 1953.

Two airwomen dental assistants of the R.C.A.F. have been selected to attend a dental hygienists' course to be conducted at the R.A.F. Dental Training Establishment, Halton, Buckinghamshire, England. The course commences 1 March 1954 and is of 31 weeks' duration.

Dr. C. J. W. Duesling, a graduate from the University of Toronto in 1953, has been accepted as a dental officer in the R.C.D.C. with the rank of Captain.

The Provinces

British Columbia

We have been informed that in the list of Canadian dentists awarded Fellowships in the **American College of Dentists**, the name of Dr. John R. Ingle-dew of Vancouver did not appear. We regret this oversight very much and wish to extend to Dr. Ingle-dew our sincere congratulations.—W. J. D.

The following annual Home Talent Program of the **Vancouver and District Dental Society** held in January was, as usual, a fitting initiation for an active calendar year:

Afternoon Chair Clinics

- "Gold Inlays by Direct Technique" . . . Dr. Michael Pottinger.
- "Bleaching a Discolored Anterior Tooth" . . . Vancouver Endodontia Study Club—Drs. J. H. Merrell and L. R. McBride.
- "Gold Foil, Class 2" . . . Vancouver Ferrier Study Club — Dr. William Miller.
- "Preparation and Insertion, Class 2, Amalgam, Deciduous Molar" . . . Inter-City Paedodontia Study Club—Drs. J. Michaelson and Wm. Chambers.

Afternoon Table Clinics

- "Management of the Unruly Child" . . . Inter-City Paedodontia Study Club—Drs. J. F. Reid and K. W. Muirhead.
- "Dental Photography" . . . Dr. John G. Ryan.
- "Gold Foil, Class 2" . . . Vancouver Ferrier Study Club—Dr. Kirk A. Oviatt.

"Progressive Clinic on Full Dentures" (Patient in Attendance) . . . Vancouver Prosthodontia Study Club.

"Preventive Dietetics" . . . Vancouver Paedodontia Study Club—Dr. R. I. Yorsh.

Evening Chair Clinics

- "Porcelain Jacket Crown Preparation"—Dr. W. K. Sproule.
- "Preparation and Insertion, Gold Foil, Class 5" . . . Inter-City Gold Foil Study Club—Dr. J. Penzer.
- "Dental Radiography, 'Fitzgerald Technique'" . . . Oral Diagnosis Study Club—Dr. M. J. Waterman.

Evening Table Clinics

- "The Orthodontic Patient" (Patients in Attendance)—Dr. Lloyd Chapman.
- "Acrylics and Silicates—Successes and Failures"—Dr. D. A. MacDougall.
- "Baked Porcelain Inlays and Jackets"—Dr. Ralph H. Colbourne.
- "An Implant Denture Technique" (Patient in Attendance)—Dr. George Robb.
- "Mouth Reconstruction" (Patient in Attendance)—Dr. William R. Scott.
- "Gold Foil, Class 5"—Inter-City Gold Foil Study Club—Dr. N. C. Ferguson.
- "Comparison of the Long and Short Cone"—Oral Diagnosis Study Club—Drs. S. B. Smordin and Edward I. Slakov.
- "3 Successive Stages in Root Canal Therapy" — Vancouver Endodontia Study Club—Drs. M. Panar, J. E. G. Harrison and J. C. Lewis.

The **Council of the College of Dental Surgeons of B.C.** has organized carefully to impress upon the Legislature the importance of providing the necessary funds for the appointment of a Dean of



Photo by Ken—Victoria, Canada

DR. H. R. TURNER, PRESIDENT,
British Columbia Dental Association.

the proposed Dental Faculty at U.B.C. The University President and Dean of the Medical Faculty are co-operating, and as soon as the Legislature decides to release sufficient funds, a Dean of the Dental Faculty will be appointed and it is hoped that the first class of students will be registered in about two years.

The library committee of **B.C. Dental Association**, composed of Dr. G. A. C. Walley, Chairman, and Drs. C. T. Billingsley and J. L. Hornibrook, has just sent to all members a list of the books and periodicals available at the association library. There are over 200 volumes of standard works covering every phase of dentistry, mostly of recent publication. In addition 16 current dental journals are on the shelves. Books may be obtained at the association office in person, by phone, or by mail.

The members have been asked to retain their list and amend it from time to time as new volumes are added. (A

grant for additional books is made each year by the College.)

The librarian reports that an active use is made of the library.

The **Interior Dental Society** has selected these men to conduct its affairs for the next year:

President—Dr. H. R. Henderson.

Secretary—Dr. K. E. Geis.

Representative on the B.C. Dental Association Executive—Dr. H. L. Courcier.

The **Upper Vancouver Island Dental Society** held its January meeting at Parksville when Dr. S. F. Miles of Victoria spoke on the subject, "Office Management."

The **Prince George and District Dental Society** made its debut recently when its constitution and by-laws were drawn up. Monthly meetings are held on the second Monday.

These officers were chosen:

President—Dr. H. J. Hocking.

Vice-President—Dr. W. J. Aitken.

Secretary-Treasurer—Dr. J. A. Thorsness.

The society has already begun to exert its influence by a campaign to fluoridate the Prince George water supply.

D. H. M.

Ontario

At its first winter meeting, the **Ottawa Dental Association** unanimously favoured the use of fluoride in drinking water.

The Ottawa Association passed this resolution following talks by Dr. H. K. Brown, of the Department of National Health and Welfare, and Dr. T. L. Marsh of the Canadian Medical Corps.

Dr. Brown reviewed the present experiment being carried out in Western Ontario by his department. Dr. Marsh, also speaking on fluoridation, urged that all possible caution be taken before going through with the operation.

Dr. B. Raginsky, lecturer at McGill University, also spoke at the meeting; his subject was "Psychosomatics in Dentistry".

Dr. Rex Slemon, President of the Society, was Chairman of the meeting.

The **Annual Ontario Dental Bonspiel** was held this year in Welland on December 9 where there were 20 rinks in com-

petition for the C. A. McKenna trophy. Curlers came from Sarnia, Walkerton, Wingham, London, St. Thomas, Galt, Hamilton, Toronto, Brampton, Orangeville, Bracebridge, Orillia, Barrie, Elmvalle, Coldwater and of course Welland. Arrangements were made for the day through the courtesy of Welland curlers, particularly Dr. Dick Rogers who worked assiduously so that all would enjoy their favourite game to the utmost.

Of course Mr. Charles McKenna had much to do with the success of the day. He had been working on the spiel for months arranging for representative rinks, buying prizes, arranging draws, and then all day he kept scores, etc., etc., while everyone enjoyed himself.

The day ended up with a curling banquet where President Dr. Harold Campbell of Orangeville presided.

Winners of the McKenna trophy were:

Dr. R. E. Diprose, skip; Dr. Bob Marshall, vice-skip; Dr. Stewart Crouch and Dr. Gordon Doan.

Runners-up and winners of second place: Dr. Roy Hendry, skip; Dr. Stewart Holmes, vice-skip; Dr. Elmer Hackett and Dr. George Covey.

Winners of highest single game score: Dr. C. A. Ruddell and his great rink from London.

Consolation prize winners: Dr. L. N. Ryan and Dr. Fred Shuttleworth of Bracebridge.

The Division of Dental Research of the **Faculty of Dentistry**, University of Toronto, has announced a total of 39 projects in progress. The division is under the general direction of Dr. J. B. MacDonald and those participating in the various studies are: Drs. M. A. Cox, G. Nikiforuk, S. Jackson, C. I. Coburn, R. A. Connor, J. W. Lawrence, H. A. Hunter, E. M. Madlener, A. W. S. Wood, G. C. Hare, G. T. Mitton, R. M. Grainger, H. Jenkins, E. Harvold, F. Popovich, M. Hatton, W. G. McIntosh, K. J. Paynter, B. T. Dale, E. B. Cook, G. W. Street, M. R. Culbert, H. Shanks, M. Yasny, E. E. Johns, A. L. Posen, H. Thompson, A. Antoni, W. Feasby, C. H. M. Williams, M. M. Mehta and M. Jackson.

At the fall meeting of the **Durham-Ontario Dental Association**, Dr. S. George Werry of Oshawa was named President of the Association for 1954. Other officers elected were Dr. Peter E. Willson, Vice-President, and Dr. John M. Phillips, Secretary-Treasurer.

The President of the Association, Dr. Douglas Langmaid, presided at the meeting, and Dr. Gordon Johnston, Faculty of Dentistry, University of Toronto, was the guest speaker.

Saskatchewan

At the recent meeting of the Council of the **College of Dental Surgeons** of Saskatchewan, a change in officers was instituted. The new members of Council are: Dr. J. P. Whyte, President, Swift Current; Dr. R. D. Reid, Vice-President, Prince Albert; and Dr. L. J. D. Fasken, Secretary-Treasurer-Registrar, Regina.

The provincial committees are remaining the same: Public Relations—Dr. F. R. Smith, Saskatoon; Insurance Studies—Dr. R. D. Reid, Prince Albert; Public Health—Dr. W. F. Hancock, Fort Qu'Appelle.

The **City of Regina** has decided to proceed with plans for fluoridation of its water supply, and the City Council has given authority for the immediate purchase and installation of equipment.

Moose Jaw has already installed equipment, and is now in process of fluoridating its water supply.

New Brunswick

Dr. H. F. Bonnell was elected President of the **Saint John Dental Society** at the annual meeting. Other officers named were Dr. R. F. Sansom, Vice-President; Dr. E. D. Halford, Treasurer; Dr. Arthur Steuermann, Dr. A. D. Bona, Dr. L. O. Leger and Dr. I. K. Farrer, Directors.

Lt.-Col. S. K. Oldfield, of Halifax, former instructor at the Royal Canadian Dental College, Ottawa, and at present consultant of dentistry for the Eastern Command, was guest speaker at this meeting.

Dr. A. J. Coughlan was presented with a gift in honour of his recent election as President of the Canadian Dental Association. He is the first member of the Saint John Dental Society to hold this position.

Quebec

A dinner meeting held in the Queen's Hotel was the principal activity of the **Montreal Dental Club** during the month of November. Following dinner at which some seventy-five members were present, the president, Dr. M. L. Donigan, pres-

ented a brief summary of the recent Joint Meeting of the Canadian Dental Association and the Annual Fall Clinic of the Montreal Dental Club. All realized that the fact that some seven hundred and twenty dentists attended the most successful convention ever held in Montreal was due in no small part to Dr. Donigan himself who acted as Joint Convention Chairman.

The remaining part of the evening was devoted to a review of three of the clinics which were presented at the recent convention. The presentation of such reviews which has now become an annual event with the club, has enabled those unable to attend all the clinics to have a "personal" presentation given them, whilst those who have attended the clinics in question have an admirable opportunity to review what they may have since forgotten. Discussions almost invariably follow such meetings—proof in itself of the popularity of such evenings. The papers were extremely well prepared and the speakers all showed a keen grasp of their subjects. Those who participated in the presentations were Drs. E. Ambrose, F. Burns, and E. Burbank.

Three new members were accepted into the **Montreal Dental Club** at the December meeting held in the R.C.A.M.C.—R.C.D.C. Mess. They were Drs. A. G. Gervais, C. L. Moran and W. B. Donohue. Following the short formal meeting, a social hour was enjoyed. R. F. H.

The **Mount Royal Dental Society** held its Annual Dinner and Ladies' Night in the form of a Dinner-Dance at the Mount Royal Hotel on Saturday, November 28, 1953. The outstanding event of the evening was the presentation of Honorary Membership to Dr. Arthur S. Solomon, one of the founders and first president of the Society, who is now in his 40th year of practice. Among the distinguished guests who witnessed this honor were Dr. Johnston Abraham, Chairman of the Board of Governors of the College of Dental Surgeons, of the Province of Quebec, Dean D. P. Mowry, of the Faculty of Dentistry at McGill University, and Dean E. Charron of the Faculty of Dentistry at the University of Montreal. Dr. Gerald Franklin, Chairman and Professor of the Department of Orthodontics at McGill made the presentation. Dr. Robert M. Wiener, President of the

Mount Royal Dental Society, acted as Chairman.

In presenting the plaque of Honorary Membership to Dr. A. S. Solomon, Dr. Franklin outlined the distinguished career of the recipient since his graduation from McGill in 1913 and his qualification for the honor which is bestowed upon those "who have made outstanding contributions to the profession and rendered distinguished service to the Society," Dr. Franklin pointed out that throughout his career, Dr. Solomon has had a keen interest in dentistry and a deep-rooted desire to improve his knowledge and skill. In 1922 Dr. Solomon left his practice to attend courses in crown and bridge and ceramics at the University of Pennsylvania and again in 1927 took a post-graduate course in precision work. He has always been eager to share his knowledge with his confrères by means of lectures and clinics.

Dr. Solomon's career in organized dentistry and public service is also remarkable. In 1921 he was one of the founders of the Mount Royal Dental Society and served as its first president. Since then he has served two additional terms as president and his aim and ambition has always been the continuous progress of the Society towards worthy professional recognition which he has pursued with outstanding and constant devotion. Dr. Solomon has also served two terms as a member of the Board of Governors of the College of Dental Surgeons of the Province of Quebec. He has been and continues to be active in community service. He was one of the organizers of a dental clinic at the Hebrew Orphans' Home and has served on the Dental Staff of Mount Sinai Sanatorium for T.B. patients and the Herzl Dispensary. He was the first to volunteer his services to the dental staff on the Jewish General Hospital where he now holds the position of Senior Dental Surgeon. He has also given service as contributor, worker and chairman of various philanthropic appeals for funds and is known to all who know him as a warm, generous, loyal, sincere and stimulating friend.

The central theme of the messages delivered by the guests and the main address by Dr. A. S. Solomon was the need for continuous progress by the dental profession. Dr. Abraham stressed the need for constant elevation of the ethical and moral relationship of the dental profession with its allied professions and the public. Dean D. P. Mowry outlined the continuous expansion of the training



DR. ARTHUR S. SOLOMON RECEIVES HONORARY MEMBERSHIP

Left to Right: Dean D. P. Mowry, Faculty of Dentistry, McGill University, Dr. R. M. Wiener, Pres. Mt. Royal Dental Society, Dr. Gerald Franklin, Chairman and Professor of the Dept. of Orthodontics, McGill, Dr. Johnston Abraham, Chairman of the Board of Governors of the College of Dental Surgeons of the Province of Quebec, Dr. Arthur S. Solomon, Dean E. Charron, Faculty of Dentistry, University of Montreal.

facilities of the faculty at McGill from its humble beginnings in 1904, and announced that the clinical facilities would be moved in 1954 to the new Montreal General Hospital where the most-up-to-date equipment will be maintained and the available space will be three times that of the present clinic. Dean Charron praised the progress of organized dentistry and joined the other speakers in expressing his admiration for the Mt. Royal Dental Society in its efforts to further the aims and ideals of the profession. Dr. A. S. Solomon in his acceptance address stressed the importance of impressing the medical profession and the public that the healing arts of dentistry are important. He pointed out that the basic training obtained at the University must be followed by continued study and post-graduate advancement.

The dinner was followed by dancing much to everyone's enjoyment.

The evening was under the convenorship of Dr. M. Toker with Dr. L. Lang as chairman of arrangements.

M. R. L.

Alberta

Dental and hospital officials recently announced that plans were being made to set up a complete oral surgery department in the Calgary General Hospital. When these plans have been completed, the General will be the only hospital in Western Canada where the dental staff will have full operating rights and privileges on such a large scale.

Dr. H. L. Freeland, chief of Dental Surgery, stated that this move could not help but result in improved dental treatment for the people of Calgary. Director of the General Hospital, Dr. L. O. Bradley, commented that he was impressed

with the enthusiasm Calgary dentists were showing in the new clinic.

Needs of the proposed clinic were being audited, and when completed the requirements were to be placed before hospital officials.

At a dinner meeting of the **Edmonton District Dental Society** recently, Dr. G. M. Little, city medical health officer, who was the speaker, stressed the need for enlargement of Edmonton's dental examination services, possibly to include pre-school children.

Dr. Little also indicated that Edmonton's health services are up for revision, but warned that a new comprehensive service could not be expected in the near future. An adult education programme on dental matters was a necessity, he added.

Dr. Little thanked the Society for its cooperation, advice and investigations aimed at improving the school dental services.

During a discussion following Dr. Little's talk, Dr. Scott Hamilton, dean of the faculty of dentistry at the University of Alberta, suggested more information on fluoridation of drinking water be made available to the public. The fact that the University dental faculty and the Society endorsed the fluoridation plan should, he felt, "carry some weight."

Dr. H. R. MacLean, dental adviser to the Alberta Research Council, investigating community water supplies, reported that the council would be releasing its findings on fluoridation soon.

A meeting of the **Calgary Dental Association** on December 1st commenced

a five-day programme for dentists who attended the annual meeting of the Board of Governors of the Alberta Dental Association. Dr. R. A. Rooney addressed the meeting.

On December 2nd the general meeting of the Alberta Association took place, and throughout this day Dr. William B. Ninaber, professor of operative dentistry at the University of Minnesota, held clinics. Dr. E. P. Scarlett, chancellor of the University of Alberta, addressed the dinner meeting.

The Board of Governors met on Thursday, Friday and Saturday, December 3rd, 4th and 5th. Dr. H. R. MacLean of Edmonton is President of the Alberta Dental Association, and Dr. James Zimmerman of Calgary is Vice-President

Dr. James Zimmerman of Calgary was elected President of the Alberta Dental Association at its recent annual convention.

At the convention, the Board of Governors of the Association approved unanimously the newly-instituted dental examining board.

Dr. E. P. Scarlett, chancellor of the University of Alberta, who addressed a dinner meeting of the Association, stated that unless facilities for dental education were expanded greatly during the next five years, the profession would deteriorate greatly.

Following the Convention, the Board of Governors announced the establishment of three scholarships of \$200 each for students in second, third and fourth year dentistry at the University of Alberta, a \$50 prize to a promising first-year student, and a gold medal to the top student in the graduating class.

General News

Following conferences with the A.D.A. Special Committee on Problems in the Field of Oral Surgery and the Council on Hospital Dental Service, the **Joint Commission on Accreditation of Hospitals** has agreed that hospital bylaws concerning the dental staff be interpreted to give dentists the privilege to admit and discharge patients and that the hospital staff be known as a "medical and dental staff." This action was described by A.D.A. officials as a major step in clarifying the status of dentists on hospital staffs throughout the nation.

Dr. William J. Gies honoured on the occasion of his 81st birthday.

The following resolution was presented to Dr. William J. Gies and was signed by Alfred J. Agis on behalf of a large committee of prominent dentists so formed for the purpose of honouring Dr. Gies. The resolution is as follows:

WHEREAS: We subscribe to the philosophy regarding the aims and preventive goals of dentistry expressed in the attached declarations, "Preventive Oral Medicine in Private Practice, Public Health

and Occupational Health," now therefore be it

RESOLVED: That the promotion of preventive oral medicine in private practice, public health and occupational health is an essential and immediate need for the advancement of dental science, art and practice, and be it further

RESOLVED: That we, the undersigned practising dentists, shall dedicate ourselves to the practical realization of the ideals promulgated by Dr. Gies

through the dissemination of this knowledge in dental literature, education, and research, and be it further

RESOLVED: That copies of these resolutions be forwarded to the officers of the American Dental Association, the American College of Dentists, of state dental societies and the editors of all important dental journals.

In behalf of the Committee, it is my pleasure to present to you, on your 81st birthday, Greetings and Best Wishes for your continued good health and welfare.

In Memoriam

Walter Bonney.—Dr. Walter Bonney died at his home in Toronto on December 21st, 1953, at the age of 73.

Dr. Bonney, who was born in England, came to Canada as a boy, and graduated from the Royal College of Dental Surgeons of Ontario in 1905. He practised in Toronto for 40 years, until his retirement in 1947.

He was a member of Woodgreen United Church, where he was at one time organist, and a former member and past Secretary of the Mendelssohn Choir.

Dr. Bonney was a brother-in-law of the late Dr. Thomas Cowling, formerly Assistant-Dean of the Faculty of Dentistry of the University of Toronto.

Dr. Bonney is survived by his wife, the former Eva Cowling; two daughters, Mrs. R. Gauthier and Mrs. J. D. Montgomery of Montreal; and one son, Dr. Robert Bonney of Galt.

Walter Franklin Croley.—Dr. Walter Franklin Croley of Brantford, Ontario, died on December 22nd, 1953, at the age of 30 years.

Dr. Croley was born in Brantford, and received his early education there. He graduated from the Faculty of Dentistry, University of Toronto, in 1951, and then practised in Brantford.

Dr. Croley served in the Royal Canadian Air Force from 1941-1945, and spent three years overseas. He was a member of the United Church, and is survived by his wife.

Gordon Armstrong Elliott.—Dr. Gordon Armstrong Elliott of Brantford, Ontario, died on November 14th, 1953, at the age of 67.

Born in Brantford, he received his early education at Brantford College Institute. In 1909 he graduated from the Royal College of Dental Surgeons, and took post graduate courses at Harvard University and the Mayo Clinic. Dr. Elliott practised in Petrolia for one year, then in Brantford from 1911-1934, in Woodstock from 1934-1942, and again in Brantford from 1942 until his retirement in January.

He was a member of the Brant Avenue United Church, serving on the Church Board; of the Brant Lodge of the Masonic Order; of the Mount Horeb Chapter, R.A.M.; and of the Knights of Pythias.

He is survived by his wife, the former Alma Marguerite Rapson of Woodstock; three sisters and one brother.

Philippe Hamel.—Just at press time word reached the Journal that Dr. Philippe Hamel, President of the C.D.A. 1932-1933, passed away on January 22nd. The obituary will appear in the March issue.

Regulations Governing the Award of Studentship

1. The Canadian Dental Association through its Research Committee offers financial assistance in the form of "Studentships" to undergraduate or graduate students who have given distinct evidence of capacity for original research or who have won high distinction in scientific study during their University training, and who desire to prepare themselves further for scientific research and teaching by (a) acquiring preliminary training in a research laboratory or (b) continuing their study in the sciences fundamental to their research fields.
2. The Studentships are available on equal terms to men and women for the purposes of
 - (A) An academic year of special study in the fundamental sciences at a recognized University. Grants will be made on an annual basis and applications for renewal will be considered.
 - (B) Summer or part-time employment in the capacity of an assistant in a recognized research laboratory. This form of Studentship is to encourage the interest of undergraduate students or graduates in a research career.
 - (C) Consultations with recognized authorities. Applications in this category will be considered only under exceptional circumstances, such as to obtain assistance for occasional attendance at special meetings of research workers or special conferences with workers in the same field.
3. Studentships are awarded to applicants who are deemed best qualified by the evidence submitted. They are not intended to provide opportunities for graduates in dentistry to prepare themselves as specialists in certain fields or dental practice.
4. The age of the applicant and marital status will be considerations when making an award. Previous training will also be taken into account.
5. Application for a Studentship must be made by the candidate to the Research Committee of the Canadian Dental Association and addressed to this Committee, care of the Secretary Canadian Dental Association.
6. Application forms are available at the Canadian Dental Association office on request.
7. An applicant shall submit a transcript of his University record together with a statement from his sponsor who may be the Dean of a Dental School or head of a scientific department with a university, showing that, in his estimation, the applicant is worthy of training for scientific dental research.
8. The candidate shall state the institution at which he intends to study and describe specifically the plan of study he intends to pursue. A statement from the head of the institution at which the student intends to take his training, stating the institution's willingness to accept the student, should be submitted.
9. Applications for the ensuing year should be received before the first of May.
10. An applicant is required to justify the application for financial aid. He must state how much extra financial assistance he requires to complete the proposed course of study, how much of the total expense, if any, is covered by salary from the institution where he intends to study and how much by means of personal expenditure, loan, etc. Payments will be made monthly during the period the Studentship is held.
11. All apparatus and materials purchased with grants become the property of the Canadian Dental Association and must be returned to the Canadian Dental Association at the end of the tenure of the Studentship unless a specific release has been provided for, either to the individual or to a specified institution.
12. Part-time teaching in a university department or faculty may be considered favourably during the terms of tenure of the Studentship.
13. Interim reports on the student's progress may be requested from the Dean or head of the Department in which the student is working. The Canadian Dental Association reserves the right to discontinue the Studentship after reasonable warning is given the student, if progress reports are unsatisfactory. The final report prepared by the student and supported by the Dean or head of the scientific department, indicating in some detail the results accomplished in the study, must be submitted to complete the tenure of the Studentship.
14. Funds may also be made available at the discretion of the Committee for the publication of scientific articles.

Address all communications to: The Secretary, C.D.A., 234 St. George St., Toronto.

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1954	St. Andrews-By-The-Sea, N.B.	September 5th-8th
1955	Toronto, Ont.	May 15th-18th
1956	Banff, Alberta	June 3rd-6th

Future Events

Date	Function	Location	Officer	Address
Feb. 22, 1954	Ottawa Dent. Soc.	Ottawa	Dr. A. Slone	101 Rideau St., Ottawa
Mar. 11, 1954	Academy	Toronto	Dr. J. B. King	1414 Danforth Ave., Toronto, Ont.
Mar. 14-17	Clinic—Dist. of Columbia Dent. Soc.	Washington D.C.		
Mar. 19-20	Convention of B.C. Dent. Assos.	Victoria	Dr. M. J. Dohan	602 Scollard Bldg., 1207 Douglas St., Victoria, B.C.
Mar. 29	Ottawa Dent. Soc.	Ottawa	Dr. A. Slone	101 Rideau St., Ottawa
May 14-15-16	Meeting Amer. Academy of Dental Medicine	Philadelphia Pa.	Dr. William H. Greenhut	124 East 84th St., New York 28, N.Y.
May 15	Meeting Canadian Society Dent. for Children	Toronto	Dr. D. L. Rife	3014 Bathurst St., Toronto
May 16-19	Convention—Ontario Dental Association	Toronto	Miss D. Jutton	234 St. George St., Toronto
June 1-5	Pacific Coast Dental Conference	Banff	Dr. H. Baden-Powell	308 Greyhound Bldg., Calgary, Alta.
Sept. 5-8	Canadian Dental Assoc.	St. Andrews-By-the-Sea	Dr. S. K. Whetmore	147 Germain St., St. John, N.B.

Short Graduate Courses

Date	Course	Location	Address
Feb. 15-19	Operative Dentistry	Univ. of Toronto	The Dean, Faculty of Dentistry, 230 College Street, Toronto
Mar. 1-5	Periodontal Pathology	Temple University	Dr. L. Herman, 3223 N. Broad St., Philadelphia 40, Pa.
Mar. 8-12	Endodontics	Univ. of Toronto	The Dean, Faculty of Dentistry, 230 College St., Toronto, Ont.
April 5-9	Orthodontics	Univ. of Toronto	As above
April 11-15	Inlay Construction	Tufts College Dental School	Dr. Irving Glickman, Tufts College Dental School, Div. of Graduate & Postgraduate Studies, 136 Harrison Avenue, Boston 11, Mass.
April 14-16	Clinical Occlusion	Temple University	As above
April 26-30	Periodontics	Univ. of Toronto	As above
May 3-7	Dental Oral Surgery	Univ. of Toronto	As above
July 12-16	Oral Pediatrics	Tufts College	As above

Notices

University of Toronto, Faculty of Dentistry

GRADUATE COURSE IN ORTHODONTICS

Applications will be received up to March 1st for the graduate course in Orthodontics at the University of Toronto. The course commences on September 1, 1954 and continues for a period of seventeen months. Enrolment is limited to six graduates of approved dental schools. The applicants must possess satisfactory scholastic standing acceptable for enrolment of the Master of Science (Dent) degree in the School of Graduate Studies of the University of Toronto.

For further information and application forms address all inquiries to: The Dean, Faculty of Dentistry, University of Toronto, 230 College Street, Toronto, Ontario, Canada.

Journal

DE L'ASSOCIATION DENTAIRE CANADIENNE

L'impôt et les dentistes*

par HENRI L. BELANGER, C.A., Montréal

Le titre qu'on a donné à cette causerie: l'impôt et les dentistes, manque un peu de précision; en fait, je vous parlerai seulement de l'impôt sur le revenu. Du reste, quand on parle d'impôt, tout le monde pense à celui-là pour plusieurs excellentes raisons. D'abord, c'est celui qui nous touche de plus près, et aussi c'est de beaucoup le plus lourd dans tous les impôts du pays. Je n'ai pas l'intention de vous ennuyer avec des chiffres, mais il est bon de se rappeler que sur un budget fédéral estimé à environ \$4 milliards et demi, la part de l'impôt sur le revenu est de plus de la moitié, soit environ \$2 milliards et demi; ce montant se divise lui-même en deux parties presque égales, l'impôt sur les sociétés et l'impôt sur le revenu des particuliers, étant chacun de l'ordre d'un milliard et quart.

C'est un lourd fardeau, mais à tout prendre, c'est la forme la plus juste d'impôt, ou du moins ce le serait, s'il était mieux réparti. En fait, il pèse trop lourdement sur les salariés et nous verrons pourquoi tout à l'heure. Avant d'aller plus loin, je tiens à vous dire que je ne vous ferai pas un cours sur la loi de l'impôt, ni sur ses barèmes. Je veux prendre la question d'un point de vue

plus pratique, plus intéressant pour l'auditoire qui m'écoute. Je veux, avec mon expérience de comptable, vous montrer quels avantages vous pouvez et devez tirer de l'impôt. Pour surprenante que soit cette affirmation, je crois que vous en conviendrez avec moi.

Si vous le voulez bien, nous ferons tout d'abord, dans ses grandes lignes, un rapide historique de cet impôt, après quoi je m'efforcerai de vous démontrer les graves inconvénients auxquels s'exposent et que subissent un trop grand nombre de nos professionnels en évitant de payer leur impôt, et les grands avantages qu'ils trouveraient en faisant face loyalement et franchement à cette obligation fiscale. Ce ne sont pas des propos familiers chez nous, mais de plus en plus nos gens se rendront compte de leur validité et de leur évidence.

Les impôts ont existé de tous temps et l'on pourrait trouver dans un lointain passé des formes de taxes analogues à l'impôt sur le revenu, mais ne remontons pas au déluge et partons de l'institution de cet impôt au Canada. Il date de la première Grande Guerre. En 1917, le gouvernement fédéral a institué l'impôt de guerre sur le revenu; il a gardé ce nom pendant 31 ans parce qu'il devait

*Conférence prononcée devant les membres de la Société Dentaire de Montréal au cours de sa séance régulière du mois de septembre 1953.

être provisoire, mais la seconde Grande Guerre lui a donné l'élan et l'ampleur que vous savez, et il est devenu ouvertement et officiellement un impôt de caractère permanent. Il a été souvent modifié, mais, en 1948, on l'a remodelé de fond en comble. D'abord le nom a été changé; c'est maintenant l'impôt sur le revenu et non plus l'impôt de guerre. De plus, en outre de consolider l'ancienne loi et d'en clarifier les termes, on a voulu en éliminer autant que possible le pouvoir discrétionnaire du gouvernement dans l'administration et l'application de cette loi. C'est donc aujourd'hui la pièce maîtresse de notre fiscalité et une institution permanente; voilà un aspect important pour les considérations qui vont suivre. Il sert maintenant non plus seulement pour la guerre, même si presque la moitié de notre budget est consacré à des fins militaires, mais il sert tout autant à des fins administratives et sociales.

Dans un pays civilisé, les citoyens ont des devoirs envers l'Etat, ils doivent assumer leur part dans les affaires publiques, non seulement pour voter, mais aussi pour solder les frais des administrations publiques dans tous les domaines. Ce devoir incombe surtout à ceux qui sont plus fortunés. L'impôt sur le revenu consacre cette idée par un barème d'imposition ascendante que vous connaissez bien, et ce principe, toutes choses égales d'ailleurs, est assez équitable. Je crois pouvoir dire sans exagération que j'ai aujourd'hui l'honneur de m'adresser à un groupe qui représente l'une des professions les plus lucratives dans notre pays. Cet avantage a comme corollaire un devoir. Je ne doute pas que la plupart d'entre vous s'en rendent bien compte et font loyalement leur part, et je voudrais vous montrer que c'est aussi à votre avantage et que ceux qui s'efforcent d'éluider la loi s'imposent à eux-mêmes de lourdes pénalités.

Devoirs Envers l'Etat

Les estimés budgétaires des gouvernements comportent toujours une marge de fluctuation et il est possible que

parfois la politique fiscale utilise ces marges pour faire avaler au public des budgets d'allure impopulaire. Mais il est certain d'autre part que si tous les citoyens accomplissaient vraiment leur devoir, l'Etat pourrait, par ses sondages statistiques, arriver à des approximations assez exactes de ses revenus probables. Il ne peut le faire aujourd'hui qu'à l'égard des salariés dont les revenus sont visibles. Pour le reste, il existe une imprécision qui est sûrement nuisible à la chose publique.

Au contraire, dans l'hypothèse où, tout en tirant tous les avantages possibles de la loi, chacun payait son impôt loyalement, le gouvernement serait en mesure d'élaborer une politique fiscale beaucoup plus efficace, et aussi beaucoup plus juste pour les diverses classes sociales.

Devoirs Sociaux

L'attitude des contribuables qui s'efforcent d'éluider l'impôt sur le revenu est surtout blâmable, du point de vue que nous venons de voir, à cause de ses répercussions sur les autres contribuables. L'Etat prendra toujours les revenus dont il a besoin, mais s'il est incapable d'atteindre immédiatement toutes les catégories de contribuables, il sera contraint, ou du moins bien tenté, de se rabattre sur les catégories de contribuables dont les revenus peuvent être contrôlés. C'est indiscutablement ce qui existe chez nous.

Maintes autorités religieuses et sociales ont réclamé des exemptions de base plus élevées pour les petits salariés et pour les familles nombreuses. Le gouvernement n'a pas donné suite à ces demandes et l'on peut se demander s'il n'a pas reculé devant cette réforme si légitime, uniquement parce qu'il craignait de ne pouvoir pas trouver les revenus dont il a besoin. Non pas qu'une table d'imposition plus juste n'aurait pas pu assurer en principe les fonds nécessaires, mais parce que les salariés, dont les revenus sont taxés à la source, et dont les impôts sont déduits de leurs enveloppes de paye, constituent une classe qui dans l'ensemble acquitte loyalement ses impôts.

Il y a là tout de même une grave injustice sociale dans le fait que les familles à revenus modestes doivent porter une part disproportionnée du fardeau public. De plus, cette situation entraîne des conséquences sociales graves; car ces victimes se rendent compte de cet état de chose et la classe ouvrière et les "collets blancs" entretiennent mécontentement et rancœur envers ceux qui sont plus fortunés et que ne paient qu'une partie de leurs impôts. De là à la haine des classes il y a un pas que l'on a franchi dans d'autres pays. Espérons qu'il n'en sera jamais ainsi chez nous.

Mais c'est un problème auquel les classes professionnelles doivent songer. Elles doivent s'efforcer de faire là-dessus l'éducation de leurs membres, car il peut arriver que pour une minorité qui abuse, l'ensemble des professions soient mal vues des classes populaires. Danger d'autant plus grave que les professionnels tirent leurs revenus de ces classes mêmes qui sont, au moins dans une certaine mesure, obligées indirectement de payer les impôts, que devraient payer ceux qui touchent des revenus élevés.

Devoirs Envers Soi-Même

Il peut paraître étonnant à première vue d'affirmer que les contribuables doivent payer leur impôt dans leur propre intérêt, et s'en faire un devoir envers eux-mêmes, sur le plan strictement personnel. Cela pourrait s'entendre évidemment du point de vue spirituel où je n'entrerais pas. Mais je crois que ce devoir existe du point de vue immédiatement pratique et financier.

Le contribuable qui cache ses revenus pour ne pas payer ses impôts se condamne par le fait même à cacher indéfiniment ses épargnes clandestines. Il lui est donc impossible de faire fructifier ses économies et même de se créer un fonds de pension. Pour ses vieux jours, il aura des biens liquides s'il ne se fait pas prendre auparavant, mais il ne peut rien organiser; il est à la merci d'un accident, d'un vol; il lui sera impossible de réclamer, de recourir même à la police sans se dénoncer. Cette situation lui rend, en

attendant, la vie intolérable; chaque matin il s'éveille avec la crainte de tout perdre le fruit de plusieurs années de travail. Cette hantise grandira à mesure qu'il avancera en âge, que les sommes cachées seront plus considérables, que le temps ne lui permettrait plus de se refaire en cas de malheur. Ce n'est pas à des spécialistes de la santé que j'ai besoin de signaler le danger strictement physique d'une telle situation; c'est probablement la meilleure prescription pour faire des ulcères d'estomac.

Je crois qu'il faut aller encore plus loin. Celui qui pendant des années s'habitue à tromper le fisc, à éluder la loi, finit à la longue par se faire une mentalité fausse. Non seulement sur ce sujet du devoir fiscal et de ses aspects sociaux, mais sur tout le reste. Il cache ses dépenses comme ses revenus, il prend l'habitude de la dissimulation. Il s'expose à avoir des reflexes de même nature dans d'autres domaines, et même jusque dans l'exercice de sa profession. On ne peut pas fausser impunément tout un côté de sa personnalité sans que cela risque de déteindre sur le reste.

Regardons le tableau contraire; celui qui, en prenant encore une fois tous les avantages qui lui donne la loi, toutes les exemptions légitimes, accepte de payer loyalement ce que le fisc lui réclame. Il devra sans doute tailler, assez douloureusement dans son revenu, mais ce qui lui restera et qui sera encore appréciable, il sera capable de l'avouer au grand jour, d'où plusieurs avantages. Je mentionne en passant le fait de la satisfaction du devoir accompli, ce qui est chose appréciable du point de vue moral, mais aussi sur le plan de la santé physique et psychique. Le fait de pouvoir vivre au grand jour, sans inquiétude devant le fisc, remplace avantageusement les inquiétudes de celui qui s'est cru bien habile en cachant son revenu.

Je n'oublie pas que je vous ai parlé d'avantages du point de vue financier, et j'y arrive. Celui qui a payé son impôt reste avec un avoir diminué au premier abord, c'est évident, aucun comptable

n'oserait dire le contraire. Mais cet avoir est officiellement à lui, il en est le propriétaire autorisé. Par conséquent, il peut en disposer comme bon lui semble, le placer, le faire fructifier. Prenons un professionnel qui en 1945 possédait des économies de \$25,000 provenant de revenus sur lesquels les impôts avaient été régulièrement payés. Disons que son confrère qui avait éludé l'impôt avait \$50,000. Le premier a pu placer ses économies. Avec la période d'expansion économique et d'inflation que nous avons traversée depuis huit ans, il n'a pas manqué d'occasions d'accroître son capital; il a pu faire des placements, des accumulations de capital qui ne sont pas taxables, ou retirer des revenus intéressants même après déduction des impôts. De plus, il ne faut pas oublier que la loi de l'impôt est conçue de telle sorte qu'elle tend à éviter la double imposition. Les épargnes ne sont pas pénalisées et la loi exempte même en partie les revenus de placement, en ce sens qu'elle autorise à déduire de l'impôt à payer sur l'ensemble du revenu, 20 p. 100 des dividendes reçus de corporations canadiennes. Ainsi, par exemple, un contribuable, en 1953, qui aurait comme seul revenu un dividende de \$10,000 de corporations canadiennes, pourrait déduire \$2,000 de son impôt à payer; or l'impôt à payer sur un revenu de \$10,000 pour une personne mariée se chiffre à environ \$2,000. Donc, ce contribuable n'aura pratiquement rien à payer.

Nous pouvons donc conclure que, dans notre comparaison des deux contribuables, celui qui a placé \$25,000 en 1945 peut facilement avoir rejoint aujourd'hui les \$50,000 de l'autre. La différence c'est que le premier a de l'argent bien à lui, argent qu'il n'est pas obligé de cacher, qu'il peut continuer de faire fructifier et qu'il doublera peut-être encore d'ici dix ou quinze ans, tandis que l'autre n'aura toujours que \$50,000 s'il ne se fait pas prendre, et qu'il restera avec tous les problèmes et les inquiétudes mentionnées tout à l'heure.

Ce capital légitimement constitué permet au contribuable loyal d'organiser à

son gré sa retraite, soit par un fonds de pension, soit autrement. Le cas est bien différent pour l'autre qui ne pourra pas prendre sa retraite sans risquer de se trahir, car il lui faut garder une apparence de revenu courant, ce qui est une nouvelle servitude pour ses vieux jours.

Je pourrais développer beaucoup plus longuement cet aspect, vous citer des cas de placements avantageux qui ont doublé les économies qu'on n'était pas obligé de cacher; mais à quoi bon, vous le savez sans doute autant que moi. Ajoutons que dans le cas assez fréquent où un professionnel n'a pas le loisir ou les aptitudes pour faire fructifier lui-même ses économies, il peut s'adresser à des gens spécialisés dans la gestion d'un portefeuille. On peut conclure sur ce chapitre que le proverbe anglais dit vrai: "Honesty is the best policy." Je crois vous avoir démontré mon affirmation que c'est l'intérêt économique du contribuable que de payer ses impôts.

Devoirs Envers sa Famille

Tout ce que je viens de vous dire devrait suffire à convaincre de payer leurs impôts loyalement tous les professionnels célibataires. Mais il faut ajouter tout un autre chapitre pour le chef de famille. Car de ce point de vue surgissent pour celui qui élude l'impôt de façon systématique, des inconvénients non moins graves que ceux que nous avons vus jusqu'ici. Tout d'abord, celui qui pratique l'économie clandestine aux dépens du fisc, s'interdit d'assurer adéquatement la protection des siens. Cela peut sembler paradoxal, mais c'est l'exacte vérité. Il accumule plus d'argent liquide et caché, mais il ne peut pas prendre des assurances compatibles avec son revenu réel, ni avec les besoins de sa famille, car les primes révéleraient en partie ce qu'il a caché dans ses rapports d'impôt.

Autre conséquence non moins sérieuse: il est porté à mener un train de vie disproportionné à sa situation financière réelle. Comme il ne peut faire de placement, ni de dépenses visibles, comme l'achat d'une propriété, il va se tourner vers des dépenses moins visibles; il

changera de voiture tous les ans, fera des voyages, des réceptions; il pratique un gaspillage qu'il aurait évité autrement. Son train de vie est faussé, et c'est une rançon de plus.

J'en viens à une pénalité encore plus grave et plus douloureuse pour le sentiment paternel. La famille de celui qui cache ses revenus prend peu à peu et fatalement le même pli de clandestinité. Les enfants ne sont pas aveugles, ils ont vite fait, même en bas âge, de deviner les mobiles qui font agir leurs parents. En grandissant, ils apprendront à agir en cachette; ils apprendront à classer les dépenses en fonction d'un système faux, et ces leçons apprises dès l'adolescence risqueront de fausser radicalement leurs attitudes devant la vie. Si, plus tard, le père veut redresser ces arbres qui ont poussé de travers, la tâche sera presque impossible, et ce sera pour les parents une nouvelle source d'inquiétudes, sinon de chagrin.

Le tableau est bien différent pour celui qui pratique l'économie de façon normale après avoir payé ses impôts. Il peut apprendre à ses enfants le sens de l'épargne, car ils auront sous les yeux l'exemple d'un train de vie plus modéré et surtout l'accumulation d'un capital familial; propriété immobilière, assurances, fonds de pension, etc. Quand viendra le temps d'établir les enfants, le père pourra ouvertement se montrer généreux selon l'état de sa fortune, tandis qu'autrement il faudra là encore agir en cachette. C'est toute l'économie familiale, toute l'éducation des enfants, l'avenir et l'orientation de la famille entière qui se trouve affectée dans un sens ou dans l'autre, selon l'attitude du père devant l'impôt. C'est un point de vue auquel on ne pense guère quand on s'engage dans cette voie dans les premières années de pratique professionnelle; plus tard, il semble difficile sinon impossible de changer de conduite, et les inconvénients, les inquiétudes, les dégâts s'accumulent sur la famille.

Jusqu'ici nous avons étudié plusieurs aspects, selon les étapes de la vie, et jusqu'à la vieillesse inclusivement. Ce n'est pas encore tout. Car l'impôt nous

suit ou nous poursuit jusque dans la tombe. Celui qui cache ses revenus ne songe pas au problème qu'il peut laisser à sa famille après sa mort. Prenons d'abord le cas de décès prématuré. Nous avons vu que ce régime empêche le père de prendre les assurances que lui permettrait autrement le niveau de son revenu; il s'expose donc à laisser les siens sans ressources. Il leur laisse des économies liquides et cachées; mais la veuve se trouvera devant le même problème, avec probablement moins d'habileté ou d'astuce que son mari défunt. Il faudra elle aussi qu'elle pratique le camouflage des dépenses.

Voici une autre pénalité de l'épargne clandestine. Le contribuable qui ne peut ni placer, ni faire fructifier ses économies, qui craint sans cesse de les perdre, est enclin à mener un train de vie trop élevé comme nous l'avons vu tout à l'heure. S'il meurt, la source de ce train de vie disparaît. Il sera d'autant plus dur à la famille habitué à un luxe exagéré, de retomber à un niveau de vie modeste, sinon précaire. Comme l'avenir n'aura pas pu être assuré par une rente familiale, autre châtiment de la clandestinité, l'avenir de la famille, l'éducation des enfants pourront être compromis. Qui sait si les économies trop liquides ne seront pas dissipées en quelques années, après quoi ce sera la gêne pour la famille du contribuable qui se croyait bien habile.

Ce n'est pas encore tout. Le fisc a le bras long. Le contribuable qui cache ses revenus doit prendre garde à ses dépenses sous peine de se faire prendre et de payer beaucoup plus cher en pénalités et intérêts. Mais le même danger existe au moment du décès. La succession est un moment où l'Etat exerce un contrôle assez rigoureux sur les biens du défunt. Si quelque chose paraît louche, malheur aux héritiers. La situation pourra être aggravée par le fait que le défunt n'est plus là pour expliquer certaines transactions qu'il aurait pu justifier; la famille paiera doublement pour les erreurs passées.

Le décès est un moment si favorable pour découvrir les irrégularités dans les anciens rapports d'impôt sur le revenu,

que l'on peut croire que le gouvernement fédéral tient à conserver l'impôt sur les successions uniquement pour cela; autrement, il le laisserait probablement aux provinces. Mais comme contrôle ultime de l'impôt sur le revenu c'est une mine d'or pour le fisc fédéral. Le contribuable qui pense à toutes ces possibilités hésitera à laisser à sa famille un problème aussi redoutable.

En conclusion, je dois vous dire que ma pensée dominante devant l'attitude fréquente de certains contribuables quant à l'impôt c'est l'étonnement. Comment des gens cultivés, qui font partie de l'élite, peuvent-ils agir de la sorte? Dans tous les

domaines, et de quelque côté qu'on prenne la question, leur intérêt c'est la loyauté. En faisant des rapports réguliers et véridiques, ils conserveraient encore des possibilités d'économies substantielles; le placement de ces économies compenserait amplement à la longue les déboursés d'impôt; ils éviteraient des inquiétudes, des risques de tout perdre; ils pourraient assurer la tranquillité de leur vieillesse, élever leur famille, comme tout bon père de famille souhaite de le faire, assurer la sécurité du patrimoine familial et l'établissement de leurs enfants.

10 ouest St-Jacques

Diminution de la salivation: diagnostic et traitement

par T. SUHER D.M.D., M.S., B.S. Savara, B.D.S., L.D.S., M.S. et JOHN DICKSON, D.M.D., Portland, Oregon traduit et résumé du J.D.C., 2è numéro, 1953, par ADELARD LEBLANC, D.D.S., Lachine

L.M., fille, se présente à la clinique dentaire, à l'âge de six ans, pour un examen.

Au point de vue général, seuls sa grandeur et son poids sont anormaux.

Dans sa bouche, on note des transformations des muqueuses et, sur stimulation, on ne peut recueillir que $\frac{3}{4}$ de c.c. de salive épaisse et mucoïde en quinze minutes. Différents comptes de lactobacilles varient entre 75,000 et 200,000 par c.c. La carie avait déjà fait des ravages et les poursuit: neuf dents primaires ne sont plus que fragments de couronnes ou racines; des dix dents permanentes en voie de destruction, l'une d'elles présente une infection périapicale. C'est alors que l'on découvre une obstruction à la base des canaux de Stensen.

Quant à G.P., une autre fille, elle est examinée, pour la première fois, à l'âge de neuf ans.

Malgré une paralysie de la face et de gorge, un pied bot et des convulsions à sa naissance, son adaption et développement physiques sont normaux.

Ici, les lèvres sont sèches mais la muqueuse buccale et la langue ne présentent

pas de changement. Au moyen de parafine, on n'obtient toutefois que 3 c.c. de salive épaisse en 15 minutes. Les comptes de lactobacilles varient entre 14,000 et 80,000 par cc. Toutes les dents primaires ont été extraites et 14 des dents permanentes sont fort cariées. Une injection de colorant démontre une distribution régulière du système glandulaire.

A 10½ ans, elle a déjà perdu ses quatre premières molaires et quatre incisives permanentes. Une diète pauvre en hydrates de carbone et riche en protéines et lipides, de même que de bonnes habitudes d'hygiène buccale ont réussi à diminuer le nombre des lactobacilles et celui des nouvelles lésions; au cours des derniers mois.

La cause de l'obstruction des canaux de Stensen semble être une aplasie congénitale; celle de l'hyposécrétion, dans le deuxième cas, un trouble du système nerveux. Le point important toutefois est la diminution du flot de salive.

L'activité de la carie dentaire dépend de deux variables: le rythme de formation d'acides et celui de leur neutralisation et élimination. Le rôle de la salive est de neutraliser les acides. Dans les bouches où elle est en quantité insuffisante, la destruction par la carie est rapide. Cet intéressant article nous le démontre une fois de plus.

Crise des traitements dentaires

Le nombre des dentistes au Canada se chiffre à environ cinq mille pour desservir une population d'une quinzaine de millions: ce qui veut dire un dentiste pour 3,000 personnes. Les dentistes canadiens sont-ils assez nombreux pour suffire à la tâche? Assurément, non. Les chiffres nous manquent pour les principaux pays du monde, mais aux Etats-Unis, il y a un dentiste par 1,800 personnes et chez nos voisins, on trouve que la profession dentaire n'as pas assez de sujets. Nos cinq facultés dentaires sont remplies à capacité; elles ne peuvent actuellement former un plus grand nombre de nouveaux dentistes à cause du manque de personnel enseignant, à cause de l'exiguïté de leurs locaux et à cause de disponibilités pécuniaires insuffisantes.

Depuis quinze ans, les écoles dentaires n'ont pas augmenté leur potentiel d'enseignement; il y a quinze ans, elles n'enseignaient pas à un plus grand nombre d'étudiants. Nos facultés sont restées au même point, malgré l'accroissement phénoménal de la population, qui s'est multipliée du tiers.

En général, les dentistes sont surchargés de travail et plus de 50% des cinq mille dentistes du Canada ont plus de cinquante ans d'âge. C'est dire que d'ici quelques années, le nombre total des membres de la profession, en rapport avec la population, va encore baisser davantage à cause des décès et des retraites.

Actuellement, le contingent de nouveaux diplômés qui sort des centres d'enseignement, suffit à peine à combler les vides créés par les morts et les retraites. Et la population augmente toujours; et la population devient plus instruite en hygiène dentaire et exige plus de soins pour ses dents.

Dans une enquête entreprise dans les provinces par le gouvernement fédéral sur l'état de la santé de la population canadienne, il ressort que durant une année, 1950-1951, seulement 27.6% de la population s'est rendu chez le dentiste; ce pourcentage comprend ceux qui ont fait traiter leurs dents à fond, comme ceux qui ont fait soulager une douleur urgente.

Si seulement 27.6% de la population accapare tout le temps disponible de tous les dentistes du Canada, qu'en serait-il, si, demain, cette proportion devait augmenter un tant soit peu?

La situation est grave! D'autant plus grave, que le gouvernement central du Canada a, chacun le sait, des tendances socialisantes et que les partis d'opposition ne cessent de réclamer des lois qui favoriseraient la mainmise des gouvernants sur le domaine de la santé.

Que faudra-t-il faire pour augmenter le nombre des dentistes? La solution de ce problème est assez complexe; elle touche à plusieurs domaines. Il faudrait d'abord que les facultés puissent recevoir un plus grand nombre d'élèves, sans rien sacrifier aux exigences requises pour l'admission aux études et à leurs standards pédagogiques. Ensuite, il faudrait augmenter le nombre des facultés dentaires. Certaines provinces, telles l'Ontario et celles de l'Ouest, ont d'excellentes universités qui n'ont pas de faculté de dentisterie. Il faudrait donc que ces universités se décident à en établir. Mais, l'établissement de facultés dentaires demande des déboursés considérables et les universités, en général, ont peine à boucler leurs budgets.

Il faudrait, de plus, attirer vers les études dentaires un plus grand nombre de jeunes gens; une campagne de propagande s'impose: propagande dans les collèges, dans les écoles, dans les "high schools" pour faire connaître la profession de dentiste.

Même, si demain les facultés dentaires pouvaient recevoir plus d'élèves, six ou huit années s'écouleraient avant que le nombre des dentistes augmente substantiellement. En somme, le problème est surtout d'ordre pécuniaire. On a calculé qu'une vingtaine de millions suffiraient à doter le peuple canadien du nombre de dentistes dont il aura besoin dans un avenir rapproché, en augmentant les facilités actuelles des écoles dentaires et en établissant de nouvelles.

L'Association dentaire canadienne à sa réunion d'octobre dernier à Montréal a décidé de prendre une attitude vigoureuse à ce sujet et de faire des représentations agressives aux gouvernements concernés.

GERARD DE MONTIGNY.

Caries dentaires infantiles

Selon Ch. BENNEJEANT, la carie est une glycémie dentaire aboutissant à une acidose pyruvique et lactique, l'excès des glucides d'origine exogène ou endogène ne rencontrant pas une production correspondante d'aneurine (Schweiz. Mschr. Zahnheilk., 9 sept. 1953).

Au processus enzymatique des fermentations glucidiques s'opposent les uréides.

Les uréides puriques sont des convulsivants. Les glyoxaliniques, alloxane et hydan-toïne, sont nocifs. Les pyrimidiques sont sédatifs et, d'autre part, inhibiteurs des fermentations glucidiques (à noter que l'aneurine contient un noyau pyrimidique). Le contact de ces uréides avec la pulpe calme immédiatement la douleur et entraîne la possibilité d'une guérison pulpaire; mais il y faut une anoxybiose complète, c'est-à-dire une obturation hermétique.

Cette méthode de traitement par coiffage temporaire de la dent malade, en une séance, convient plus particulièrement aux enfants. Ceux-ci, en effet, échappent aux convulsivants qu'utilisent les adultes (thé, café, alcool, etc.) et qui contrecarrent cette médication.

Considérations d'intérêt dentaire, chez les tuberculeux*

par Robert De Plaen, D.D.S., Montréal

Dans les inflammations spécifiques, une série de microbes présente cette particularité de provoquer dans l'organisme, dès le stage initial, une granulation de tissu qui n'est autre que des lésions prolifératives que l'on nomme des granulomes infectieux.

Les réactions des tissus organiques varient avec le microbe incriminé; chaque microbe semble émettre des toxines ayant leur action propre: les uns attirent les lymphocytes, les autres, les polynucléaires, d'autres, des cellules géantes, etc. . .

Mais il existe un caractère commun, c'est celui de produire des nodules. Le nodule de la tuberculose s'appelle le *tubercule*, comme, pour la syphilis, la gomme, etc. . .

Comme il s'agit ici de la tuberculose, dont l'inflammation est produite par le bacille de Koch, nous allons voir l'évolution du *tubercule*. Le tubercule, suivant la virulence du microbe, passe au nodule gris, puis, en augmentant, devient jaunâtre, pour ensuite produire une nécrose et aboutir à un abcès rempli de pus crêmeux.

La tuberculose est donc une inflammation dont l'évolution aboutit à la caséification.

Quelque soit son volume, le tubercule est entièrement dépourvu de vaisseaux contrairement aux tissus de granulation en général: au pourtour du tubercule les petits vaisseaux sont oblitérés: cette particularité est évidemment des plus intéressantes pour le diagnostic histologique de la lésion.

Cela prouve que le microbe de la tuberculose n'a aucune affinité sanguine et que ses toxines oblitèrent et détruisent rapidement les vaisseaux. C'est pour ce motif que certaines per-

sonnes expliquent que cette maladie n'est pas héréditaire pour l'unique motif que le placenta ne laisse pas passer la bacille.

On peut suivre facilement l'évolution du tubercule dans la tuberculose miliaire aiguë. Lorsque le tubercule s'ouvre et déverse dans la circulation des bacilles, celles-ci vont coloniser dans tous les organes où ils parviennent par l'intermédiaire du sang et de la lymphe et, en quelques jours, on trouve dans ces organes des centaines de tubercules de la taille d'une tête d'épingle.

Comme le tubercule est la manifestation typique de la tuberculose, je vais vous le décrire rapidement.

Jeune, il présente une cellule typique: cellule à protoplasme abondant de forme ovale à nombreux noyaux allongés et disposés en fer à cheval près des parois à un des pôles cellulaires.

Autour, se trouvent des cellules difficilement reconnaissables, qui tendent à augmenter de volume et qui rappellent grossièrement les cellules épithéliales, à contour peu net, d'où leur nom de cellules épithélioïdes. Autour de cette couronne de cellules épithélioïdes, se trouve une zone de réaction conjonctive.

C'est dans les cellules géantes que se trouvent le plus souvent les bacilles et dont l'abondance est variable; il est des tubercules qui n'ont même pas de bacille, comme dans certaines formes cutanées. La tuberculose ne confère jamais l'immunité et même, si l'organisme parvient à se débarrasser de tous ces bacilles, il est susceptible de se tuberculiser à nouveau.

Ce qu'il y a de bizarre, c'est que ce bacille paraît polymorphe, c.à.d. que sa forme acido-résistante peut n'être

* Communication présentée au Congrès de la Société Dentaire de Montréal, le 7 mai 1953.

qu'un aspect transitoire dans un milieu pauvre en azote et en hydrate de carbone et il peut perdre ses qualités et ne plus sécréter de tuberculine. D'où nous pouvons voir se produire des formes de réactions différentes des formes géantes (naissance de bacilles), des formes granulaires (éléments de résistance), des formes invisibles, etc.

Mais les muqueuses et la peau ne sont pas un lieu de prédilection pour la tuberculose et, s'il se produit une lésion, elle est presque toujours secondaire.

Les trois principales lésions rencontrées dans la bouche sont: l'ulcération, le lupus, la gomme tuberculeuse.

L'ulcération est la plus fréquente. Elle peut se situer sur les lèvres, la langue, les gencives, les joues, le palais.

Ici, elle pourrait parfois être primitive.

C'est une rougeur douloureuse qui évolue en une plaque jaune clair pour s'ulcérer. Son aspect est mamelonné et recouvert de détritits caséux qui ont la forme de têtes d'épingles: ce sont des granulations tuberculeuses. Mais cette ulcération ne repose pas sur une tumeur. Sur les lèvres, elle se situe à la lèvre inférieure. Sur les gencives, elle provoque la chute des dents. Sur la langue, elle est très douloureuse et se localise sur le dos de la langue.

Le lupus est une tuberculose locale principalement chez les jeunes sujets et elle est très rare.

La gomme ne se présente qu'en avant du V lingual; elle est sous-muqueuse et ne touche pas les muscles.

Toutefois il faut faire attention de ne pas la confondre avec l'ulcère syphilitique, p.c.q. leur apparence et leurs signes cliniques sont les mêmes. Il faut pour cela faire l'histoire du cas, des analyses de laboratoire bactériologiques et anatomo-pathologiques.

Les cas présentant des lésions mu-

queuses, ont pour cause principale une mauvaise prophylaxie de la bouche: dentiers mal ajustés, dents cariées dont les bords irritants ont produit une blessure, malpositions des dents.

Les gencives des tuberculeux mourants, que j'ai eu l'occasion de voir, avaient un aspect blanc nacré dû à l'anémie, et cela sur toute leur étendue. Les patients se plaignent de douleur dans toute la bouche et leurs gencives épousent toutes les ondulations de l'os. La seule chose que je fais en ces cas pour les soulager, c'est de badigeonner légèrement à l'eugénol sans excès pour éviter de les faire tousser.

Une remarque en passant, parce qu'elle regarde les muqueuses. Il ne faut point prendre d'empreinte lorsque le patient fait de la température, parce que à ce moment, les tissus sont gonflés par l'hyperhémie; lorsque l'état du patient redevient normal, les gencives diminuent de volume et les prothèses ne s'ajusteraient plus aussi bien. Passons maintenant au tissu osseux.

Ce tissu, pas plus que le tissu muqueux, n'est attaqué et, si cela ce produit, c'est la partie spongieuse des parties jeunes de l'os qui en souffre. C'est une manifestation secondaire qui se produit chez un sujet jeune ou chez un adolescent.

C'est l'os malaire et les maxillaires qui pourraient l'être le plus facilement par rapport aux autres os de la face en fonction des cellules spongieuses qu'ils contiennent.

Le tissu intro-osseux se congessionne, se ramolit, se nécrose, pour finalement s'émietter, s'éroder et se briser.

D'après certains renseignements de médecins de longue expérience, les fractures sont devenues très rares du fait que la maladie a diminué de virulence à cause de la facilité de traitements, d'amélioration de diète, des

découvertes pharmaceutiques, etc. . .

Tout de même, sans arriver aux fractures, on peut constater que l'os des maxillaires est moins dense et moins résistant.

Les dents, par exemple, sont plus lâches dans les alvéoles, et leur extraction est plus facile.

Après la confection de prothèses, j'ai parfois constaté une véritable lyse osseuse, causée vraisemblablement par la pression des pièces. Ces incidents se notent surtout chez les grands tuberculeux.

Cela n'est pas étonnant, parce que les tuberculeux sont principalement des hypocalcifiés.

Je voudrais vous exposer le point de vue purement dentaire chez le tuberculeux en ayant recours à certains points généraux, pour vous faire mieux comprendre cet état de fait.

Cela m'écartera peut être un peu de mon sujet, mais une vue générale de la question me paraît assez intéressante.

La tuberculose par elle-même, n'élève pas le nombre des caries dans la bouche, mais, en fait, le tuberculeux présente en général un nombre de caries plus élevé.

Cela paraît paradoxal et je m'explique:

Prenons l'exemple d'une tuberculose tardive ou accidentelle: son nouvel état ne modifie pas l'aspect des caries; il ne paraît nullement y avoir une tendance plus marquée vers la destruction de la dent.

S'il y a une polycarie chez le tuberculeux, dont la majorité des cas n'est ni tardive, ni accidentelle, cela provient de la déficience et de l'hypocalcification au cours de la formation de la dent:

Déficiences qui, plus tard, situées dans le milieu buccal où agissent une foule de facteurs, sont responsables du nombre plus élevé de caries.

Nous nous trouvons donc en présence de deux éléments.

Une série d'éléments extérieurs avant tendance à envahir et détruire la dent par une série de facteurs et l'autre, l'objet envahi, qui n'est autre que la dent.

Suivant la résistance plus ou moins grande de la dent, nous aurons une destruction plus ou moins forte ainsi que plus ou moins nombreuse. Faisons ici une parenthèse. Pour justifier que la résistance de la dent diminue la carie. Prenons pour cela une question d'actualité: celle du fluor.

Les ions fluor transforment les hydroxy-apatites (ne sont autre chose que des phosphates de calcium de la dent.) en fluor d'apatite qui est plus résistant et moins soluble dans le milieu buccal. Cela nous a donné comme conséquence une diminution de carie très marquée et ceux d'entre vous qui ont assisté à la dernière réunion mensuelle de la Société dentaire, de Montréal à l'Aqueduc de Montréal ont pu entendre l'exposé du docteur Bouillon sur les statistiques qu'il nous a présentées. Ces statistiques étaient assez éloquentes et j'abstiendrai de m'étendre sur la question.

Revenons donc à la formation de la dent et voyons son développement durant les deux périodes: 1) prénatale; 2) postnatale.

La période prénatale

La première manifestation du système dentaire apparaît dans l'embryon lorsqu'il atteint environ 20 mm.: c'est la lame dentaire qui est à l'origine des deux dentitions. La partie antérieure donne naissance à la première denture ainsi qu'à la seconde, exception faite des molaires postérieures permanentes, qui ont leur origine dans la partie postérieure, mais seulement à la période postnatale, c.à.d. six semaines après la naissance.

Revenons donc à la période pré-

natale; nous constatons que vers le septième mois se développe sur chaque papille la première couche de dentine.

Or la dentine représente la structure intime de la dent et il a été établi que le facteur nutrition et surtout la vitamine D prennent une grande part dans sa bonne formation.

Durant cette période, c'est la future maman qui fournit tout les éléments fondamentaux et, suivant le cas, constituera une base plus ou moins forte. Le problème n'est pas si mathématique que cela. Le calcium ingéré par la future mère ne donne pas comme conséquence absolue de bonnes dents à son enfant.

Le problème est plus complexe et c'est un ensemble d'éléments qui entrent en ligne de compte: le jeu de l'absorption, le rôle des glandes endocrines (principalement la parathyroïde, en ce qui nous regarde) et surtout une diète balancée, comprenant les protéines, les gras (lait, beurre, viande), les hydrocarbonés (céréales, sucres, légumes) les sels minéraux, calcium, phosphore, iode, fer, les vitamines (surtout la vitamine D).

L'ensemble de ces éléments joue un rôle primordial et c'est pourquoi une diète balancée pour une femme enceinte est de nature à procurer à son jeune enfant une dentition plus forte et plus solide qui saura résister mieux aux agents extérieurs.

Une clinique de Chicago a contrôlé une expérience de longue haleine où les diètes de femmes enceintes ont été surveillées et des statistiques sérieuses nous montrent d'heureux résultats sur les dentures des enfants. Si nous regardons l'évolution de la denture, nous observons que sa résistance maximale à toutes agressions du milieu est obtenue vers l'âge de 3 ans et son hypercarbonatation adamantine lui donne une immunité temporaire qui va disparaître et passer à un phénomène de lyse qui débute dans le conjonctif dentaire pour

gagner toutes les dents temporaires.

En fait, une grande part de la responsabilité du sort de la dentition relève de la mère et si elle n'a pas répondu aux exigences d'une bonne formation de base de la dent, nous assisterons à un état dentaire fragile chez l'enfant.

Dans le cas de mère tuberculeuse, il est certain qu'il existe un état d'infériorité et qu'elle engendra un enfant avec une première denture bien plus fragile.

Maintenant, je me garde bien de vous dire que les enfants de tuberculeux ont tous de mauvaises dents parce que les dents permanentes ne révèlent plus tant de l'hérédité et c'est ce qui m'amène à la seconde période, c.à.d., *la période postnatale*.

Durant cette période, c'est l'enfant qui prend la charge de sa formation dentaire puisque la calcification s'étend jusqu'à l'âge de 15 ans environ. Si, durant cette période, l'enfant développait une état pathologique, on assisterait sûrement à des troubles de formation, dont les conséquences se feront sentir plus tard.

C'est pourquoi il faut suralimenter un enfant, surtout durant sa période de convalescence, afin de pouvoir obvier, parer à la déficience qu'il aurait subie durant sa maladie.

C'est durant la période de croissance de l'enfant qu'un ensemble d'éléments est nécessaire, ensemble semblable à celui dont la future mère a besoin, lorsqu'elle porte son enfant.

Parce que la dent, lors de sa formation, est plus ou moins poreuse et qu'elle demande une série d'éléments pour combler cette porosité.

Certaines expériences ont prouvé la porosité de la dent lors de sa formation, celle en outre qui consistait en une injection intra-péritonéale de jus de thypan à un rat, un chien, un lapin jeune; ce jus pénètre jusqu'à l'émail de la dent pour y demeurer définitive-

ment, ce qui prouve bien une porosité plus ou moins grande lors la formation dentaire. Si donc la substance comblant cette porosité n'est pas de qualité, il va en résulter une lacune.

Price prétend que les gens qui ne font presque pas de carie ont une diète très riche en calcium et en vitamines et moins riche en hydrocarbures. J'ai entrepris un petit interrogatoire, sous forme de conversation avec les patients tuberculeux, et je me suis aperçu d'un ensemble de réponses qui contribuait directement ou indirectement à établir un déséquilibre dans la formation de la dent.

C'est pourquoi, je n'ai pas été étonné de voir dans ces bouches autant de dents molles et mal calcifiées, des caries à marche rapide.

C'est vrai, j'ai laissé de côté les agents extérieurs qui contribuent incontestablement à la destruction dentaire, mais je puis vous avouer que je n'ai pas eu les loisirs pour les étudier, faire des prélèvements, etc. . . Nous traitons également à l'hôpital du Sacré-Coeur une autre série de patients qui relèvent du service d'orthopédie et dont l'aspect dentaire est bien différent.

Cet aspect présente surtout une différenciation de structure et c'est le motif pour lequel je me suis efforcé de parler du point de vue dent et formation.

Vous pourriez me soulever l'objection suivantes "Le taux du calcium est toujours le même dans le sang". Parfaitement, mais cela n'est pas une preuve. Si le calcium n'est pas utilisé, il restera dans le sang, mais il sera toujours le même; tandis que si une quantité venait à être fixée, elle sera remplacée par une quantité équivalente de nouveau calcium pour rétablir la quantité normale. Une seconde objection possible:

Si nous faisons griller des dents de tuberculeux et des dents de non-tuber-

culeux, la quantité de sels minéraux est toujours, ou à peu près, la même.

Ici, je vous répondrai que vous avez raison, mais les faits sont basés sur une constatation "in vitro" mais le rôle biologique du calcium est éliminé. Vous pouvez avoir une même quantité de sels minéraux, mais avoir des combinaisons différentes dont les propriétés de résistance peuvent varier.

Avant de terminer, je vais vous mettre devant les points saillants qui différencient les tuberculeux et les patients d'orthopédie. Je m'excuse de le répéter pour ceux d'entre vous qui sont venus à l'hôpital du Sacré-Coeur, en janvier dernier.

1° Les tuberculeux présentent une dent molle, souffrant de carie à marche rapide, sans défense, tandis que les autres offrent une dent plus dure avec des caries présentant une défense.

2° Les tuberculeux ne peuvent subir aucun traitement de canal sans aboutir à un abcès, tandis que les autres subissent le traitement normalement.

3° Les tuberculeux présentent fréquemment une hypersensibilité au collet des dents, tandis que chez les autres, cette hypersensibilité est plus rare.

4° Les tuberculeux présentent une dent facile à extraire, tandis que les autres présentent des dents difficiles à extraire, et même souvent soudées à l'os; ce qui entraîne des réactions post-opératoires, résultat indiscutable des traitements de calcium à forte dose que subissent ces maladies.

5° Le tuberculeux présente une gencive moins résistante où les gingivites sont difficiles à traiter, tandis que les autres présentent également des gingivites qui sont le résultat d'un manque de prophylaxie, qui, étant donné leur état d'invalidité pendant quelquefois de longs mois, en est souvent la cause, mais ces gingivites se soignent bien; après une prophylaxie tout entre dans l'ordre.

6° Le tuberculeux présente une lyse

osseuse qui se produit plus facilement sous la pression des dentiers, tandis que chez les autres, c'est plus rare.

Voici une revue rapide, des princi-

paux points de différenciation; j'espère vous avoir intéressé et c'est en vous remerciant de votre aimable attention que je termine cet exposé.

LES DIX COMMANDEMENTS DU DENTISTE

- 1° Matin et soir, tes dents brosseras afin de vivre longtemps.
- 2° Ton dentiste, tu visiteras à tout le moins annuellement.
- 3° Fruits et légumes, tu mangeras pour fortifier tes dents sûrement.
- 4° L'excès de friandises, éviteras pour conserver tes dents précieusement.
- 5° Tes aliments, tu mastiqueras pour digérer plus facilement.
- 6° L'usage du cure-dent, banniras pour garder tes gencives sainement.
- 7° Une dent négligée, se cariera et au dentier te conduira fatalement.
- 8° Le dentier, ne désireras qu'en dernier ressort seulement.
- 9° Tes honoraires, tu paieras à ton dentiste fidèlement.
- 10° Dans la joie et le bonheur, tu vivras en observant ces commandements.

Eugène Blouin, D.D.S.

Art Dentaire ou Science Dentaire?

Art certainement puisque dans la réalité des choses, il n'y a ni science ni art, mais la *vie qui est la source unique*. Cependant lorsque la science n'est pas un art, elle s'éloigne de la vie et ne répond plus qu'à la prétention intellectuelle ou à la recherche sans issue.

Mais, nous dira-t-on, ce qui sépare l'art dentaire des beaux-arts, c'est sa nécessité. Or la science est utile, voire nécessaire.

C'est justement là à notre avis, l'erreur qui fait confondre la science utilisatrice avec la vraie science qui est la suprême poésie.

S'il est évident que l'art dentaire est utile et nécessaire il ne vaut cependant que par la qualité la plus exceptionnelle; et cette recherche illimitée de la qualité, voire de la perfection, en font un art par excellence, art qui sous-entend des vues biologiques constantes, une adresse d'orfèvre et de sertisseur, une imagination créatrice, un art dans lequel l'ouvrier ne peut se séparer du physiologue, un art qui contraint l'artiste à réparer les accidents de la vie, par un matériau varié, immobile, si judicieusement combiné qu'il s'accorde parfaitement avec tous les mouvements de cette vie.

Raisonner sur quelque chose, n'est pas démontrer; se perdre dans la complication est le contraire de la complexité, matière même de la réalité. Or "la vie est une dans sa diversité, et si l'individualisme humain apparaît comme infini, c'est parce que la nuance se divise elle-même à l'infini".

Faire l'histoire de l'art dentaire serait examiner dans le temps humain, dans cet art, son apparence.

Avec un esprit qui s'efforcerait de proportionner, il serait intéressant de faire un jour ici, l'histoire de l'art dentaire, son évolution, en songeant à la parole de Platon: "C'est dans les périodes de décadence que l'on complique l'orchestre". Il faudrait alors séparer les innombrables recherches de détail aussi bien dans la prothèse que dans les soins de l'essentiel d'où cet art bien attachant pour l'artiste est bien salvateur pour le patient.

Médecine et Hygiène, le 1er octobre, 1953

Preventive dentistry in children and its relation with diet

by JOHN SHINTANI, D.D.S., Montreal

First prize essay in War Memorial Award Competition

DR. HUGO M. KULSTAD¹, Past President of the American Society of Dentistry for Children, states that "Better eating habits, an adequate diet, and the reduction of those foods and confections known to cause or contribute to dental disease have been shown to improve dental health in miraculous ways." Dr. Roger H. Dennett, Professor of Diseases of Children, Columbia University, is equally confident of improving children's dental health through dietary means. He writes, "It seems possible to predict that at the present time we are within reasonable distance of getting complete control of dental caries by diet and diet alone, both by producing perfect teeth and, even when the teeth are badly formed, by inhibiting the destructive action of bacteria on the teeth."² The significance of the relationship which exists between good diet and good dental health is apparent; if properly con-

trolled, diet alone can contribute much to the prevention of dental caries in children. Inasmuch as "control and prevention of dental caries still remain the foremost problem in dentistry,"³ the scope of this thesis shall limit itself to the discussion of diet as it affects dental caries.

A number of clinical experiments gives substantial support to the claim that dental caries can be prevented and arrested through proper diet^{4,5,6}. As far back as 1929, Boyd et al⁶ have reported the possibility of a complete caries arrest through controlled dietary measures. He specified that each child of preschool age should receive daily one quart of milk, one egg, a teaspoonful of cod liver oil, one ounce of butter, one orange, two or more servings of succulent vegetables or fruits, and such other foods as the child desires. Candy was allowed only after meals. Caries had been completely arrested in five children who had followed the regimen and were kept under observation. They reported that these arrests took no longer than ten weeks. Boyd⁴ conduct-

ed a statistical study of 250 school children of normal health of whom 80% were kept under quantitatively prescribed dietary regimens. Having observed them between 1926 and 1937, he reported that those children who had presented active caries at the beginning of the studies showed a preponderant tendency to develop sclerosis of the exposed dentin in the carious areas within a few weeks or months after the dietary regimen was established. An apparent arrest was indicated since no further progress of decay was shown as long as the regimen was followed in its entirety. On the other hand, the children not receiving the controlled diets failed to show a similar oral state; the residual caries in these children tended to progress in significant contrast to the definite retrogression found in the children who were kept under the dietary control. It is evident from this that there is a definite relationship between caries and diet.

THE IMPORTANT YEARS

One's dental health is governed by nutritional conditions which have prevailed during not only one's childhood but during one's fetal period as well. The importance of the fetal period can be appreciated from the fact that the first indications of dental structures appear about the fiftieth to the sixtieth day of embryonic development.⁸ The enamel organs of all the deciduous teeth appear about the eighth week of embryonic life, and by the ninth week the dental papilla makes its appearance. At about the sixteenth week both the dentin of the deciduous teeth and the enamel buds of the permanent teeth are beginning to develop. The first permanent molar begins to calcify at about birth. About two and a half to three years after birth the second molar begins to calcify while the third molar begins its calcification between the ages of seven and ten.

The teeth, once they have calcified, have just as good or just as bad a structure as they are going to have for the rest of their life.⁹ This implies that it is during childhood, when calcification takes place, that the value of diet is most significant. A defective structure of the deciduous teeth results from a disturbance of metabolism during the last two months of pregnancy and the first few months after birth.¹⁰ The dental condition of the young child reflects protracted deficiencies in the maternal diet during pregnancy.³⁶ Unfortunately, there seems to be no body mechanism by which calcium and phosphorus can be incorporated into the enamel of fully formed, erupted teeth, even if they were assimilated by the body. Therefore, teeth must receive adequate nutrition during their period of development. From birth to seven or eight years of age is the important period for the structure and composition of enamel.^{9,11} (N.B. According to Alfred Kantorowicz, the enamel development can be influenced only in the post natal period up to the fourth year.)³⁷ The first three years of life are especially significant with respect to the first permanent molars.⁹ A well-balanced diet will very likely help to secure well calcified teeth during this crucial formative period. But after this time, no nutrients in the diet except fluoride in drinking water (up to about twelve years of age) can be added to the enamel structure; nor can enamel be rebuilt or repaired by any known dietary constituents.¹¹ Thus we see that diet should be especially well-balanced and adequate from the last two months of fetal life up to eight years of age.

Having experimented with animals, Dr. Reidar F. Sognnaes reports that the caries score per month for the rats is four to five times greater in those animals whose teeth were formed on sucrose diet than in animals bred on stock rations (scientifically prepared

laboratory animal food—Purina). He notes that little or no caries developed except where the sucrose ration was fed both before and after the eruption of the teeth. The parent animals bred on the stock diet were unharmed by a period of oral exposure to the sucrose diet twice as long as that of their litters. When the litter mates were changed from the sucrose to a dextrin or to a whole wheat ration at weaning time, the caries incidence became very low. According to Dr. Sognaes, caries susceptibility appears to be influenced by an unrecognized mechanism, a nutritional factor or combination of factors operating before eruption of the teeth from conception to maturation of the offspring and their individual teeth.¹² This is an added stress on the importance of the developmental period of the teeth.

Irene Allen of University College, London, has found, after examining 120 elementary school children over a period of one year, that the structurally sound teeth are those of which the greatest part is formed in utero before dietary deficiencies are normally felt by the child. It can be said, therefore, that a definite association exists between the quality of the teeth and the amount of caries present.¹³ This suggests greater resistance of well formed teeth to caries. And sound teeth are apt to be formed on good diet rather than on a poor one.

Mothers with young children should be especially made aware of the importance of dietary requirements not only after birth (up to the age of about eight years), but also during the baby's uterine life. Carbohydrate intake should be kept at a minimum while foods rich in "protective factors" and other essentials should be carefully selected both for themselves (when pregnant) and for their young children.

WHY SOME PERIODS REQUIRE MORE DIETARY PRECAUTIONS

Nobody knows, as yet, in what man-

ner the nutritional state affects the production of dental caries but if nutrition affects the incidence of dental caries, it probably does so through some action on the oral environment. Dr. Genevieve Stearns¹⁴ separates the nutrients of the diet into two classes: (1) those whose digestion products are easily soluble in water and (2) those soluble with difficulty. She continues that this second group of nutrients should be of primary concern in a study of relationship of nutrition and dental caries. The substances of the second group are fats and the vitamins carried by fats, vitamins A, D, E, and K; the less soluble polyvalent minerals, calcium phosphorus, and iron.

According to Dr. Stearns, there are certain periods of life which are more likely to be periods of nutritional stress than others. During these periods there will be decreased absorption and retention of the substances of the second group. The first of these stress periods occurs in infancy. The baby absorbs calcium and phosphorus of cow's milk poorly and develops rickets unless vitamin D is given. If breast-fed however, there is possibly adequate vitamin supply in the mother's milk.¹⁵ Nutrition during infancy is important in the prevention of dental caries for other things being equal, a well-formed tooth decays probably less easily than a poorly formed one, and calcification of the permanent teeth begins during infancy. A frail baby, or baby with even a mild chronic illness, does not absorb fat well; consequently it will not absorb enough vitamins A, D, E, and K. Vitamin D metabolism is therefore affected; calcium, phosphorus and iron are absorbed very poorly and may even be lost from the body in greater amounts than those ingested. The result is poor calcification of teeth.

That is why vitamin D should be given to small children since most of them are inefficient in retaining calcium and phosphorus despite ample intake of milk. It has been shown that

children with poor retention show marked increase in retention when they are given daily 300 to 400 units of the vitamin. There is a greater effect of this vitamin in younger children (three to ten years old) than in older children (eleven to sixteen).¹⁵

Adolescence is a second period of metabolic stress. Dr. Stearns recommends one and a half pints of milk daily plus 350 U.S.P. units of vitamin D for those over five years of age. She adds that 400 to 500 mg of calcium daily is needed during the period of very rapid growth. The previous nutritional state of the child (*i.e.*, previous to receiving ample milk and vitamin D) has a notable influence on the efficiency of utilization of a good diet (*i.e.*, retention of calcium and phosphorus). The longer a child is on a dietary regimen that is not fully adequate, the poorer is the condition of his gastrointestinal tract, and the child will absorb poorly those nutrients which are difficultly soluble such as calcium, phosphorus, iron, the fat-soluble vitamins, and fat.

CERTAIN FOODSTUFFS ARE HARMFUL TO DENTAL HEALTH

The dentist should know why certain foodstuffs are essential or good for the dentition while others are harmful. Without such understanding intelligent guidance cannot be given to mothers and their children nor an appreciative interest be aroused in them.

Certain foodstuffs are considered deleterious to dental health. Some of them are harmful when taken in excess, some have undesirable physical qualities such as stickiness and softness. If a good diet is to be maintained it is equally important to avoid foodstuffs that are harmful as it is to select those that are favourable to the development of healthy dentition.

CARBOHYDRATES

Roworth¹¹ writes, "Carbohydrates, chiefly in the form of sugar, especially

refined white sugar and its products, and possibly refined carbohydrates, seem to be the principal dietary factors involved in dental caries." Since carbohydrates act as an excellent substrate for acid production by certain oral bacteria, all sugars and starches are generally condemned by most authorities.^{7,16} Within two minutes after sugar enters the mouth there is enough acid produced to lower the pH to enamel-dissolving level.¹⁸ Lactobacilli and other aciduric organisms are generally tagged as the acid-producing agents. When inhibitors like penicillin are used locally (*e.g.* as dentifrice), there is a persistent drop in acidophilus counts and a reduction in caries activity.¹⁹ Evidently correlation exists between sugars, bacteria, acids, and dental caries.

It has been found that children with few cavities become highly susceptible to tooth decay when they begin eating sweets.¹⁰ Sognnaes reports that hamsters, rats, and mice are susceptible to experimental caries when fed a purified finely powdered ration, complete in known nutritional essentials and high in refined carbohydrates, particularly if its ingestion is begun during tooth formation.

Conversely, reduced consumption of refined sugar favours a lower caries rate. Dr. J. Sim Wallace of England notes that the comparison of the percentage of five-year old children with good teeth, which was 28% in 1934 and 55% in 1939, rose in 1944 to a new high record of 73.5%. This improvement is attributed to a reduction in sweets available to very young children, the improvement in the nutritional value of wartime bread, and to the largely increased consumption of fruit and vegetables during the war years.²⁰

Doctors Samuel Dreizen and Tom D. Spies²¹ report on the extremely high incidence of dental caries (average 48.5 DMF tooth surfaces and 15.1 DMF teeth per person) encountered in habi-

tual consumers of unrefined carbohydrates (sugar cane). They conclude that the extensive amount of tooth destruction accompanying the widespread caries prevalence suggests that the ingestion of the natural or crude carbohydrates together with the vitamin B's which constitute a part of the coenzyme complexes required for glycolysis aided and abetted the caries process. Schour and Massler²² report that compared to the Cuban sugar cane chewers the people of postwar Italy, where sugar supply was not abundant, showed substantially lower dental caries experience. The figures for the Italians, which range from a mean of 1.05 DMF teeth for children between the ages of eleven and fifteen and to a mean of 10.80 DMF teeth of subjects between fifty-one and sixty years of age, were 94% to 35% lower than those found in the Cuban sugar cane chewers. It seems conclusive that carbohydrates do possess qualities harmful to dental health.

It is interesting to note that some candies (e.g. Mound) possess a lower decalcification potential than many foods which had been considered more or less harmless to the teeth such as white bread, potato, bran cereal and milk, Graham cracker, etc. Bibby et al²³ report that there is no correlation between the carbohydrate content of the foods and the amount of acid produced from them or their retention in the mouth. The amount of acid produced is not primarily determined either by the total or readily soluble carbohydrate content of the foods. Neither is food retention dependent upon the total carbohydrate content of the foods. They contend that foods with a high fat content are retained in the mouth less than those with a low content and that animal fat is retained slightly less than vegetable fat. It should be noted, however, that contemporary diets (American) have a tendency to be too high in fats. Smith⁷ advises the use of butter

in moderate amounts — two squares daily — and a spare use of salad dressing and vegetable oil and fats. Retention seems to be further lessened by the presence of salt. They drew this conclusion after experimenting with identical cakes differing only in their salt content. Dr. Rowe Smith⁷ warns us, however, that excessive use of table salt complicates the inflammatory process in periodontal disease. For this reason it is advisable to minimize its use on food.

Inasmuch as we admit to the unfavourable relationship between carbohydrates and dental caries, some foods should be avoided or minimized: cakes, pies, doughnuts, candies, confections, preserves, jellies, honey, soft drinks, ice cream, lollipops, mints, and chewing gum.⁷ An effective restriction of candies will prove very difficult indeed with most children. However, candies and sweets can be limited to the end of the meal and then be followed by a thorough tooth brushing.²⁴

Smith⁷ makes some practical suggestions. He advocates various kinds of cheese and fruits for desserts. For gelatin desserts he suggests the use of pure gelatin with fruit juices and sliced fruits without added sugar. Custards and milk pudding can be used occasionally for the sake of variety. Chewing gum is condemned by Smith both for its sugar content and its tendency to cause over-bite in children by depressing their posterior teeth. In place of refined sugar, he recommends the use of saccharine in beverages and unadulterated molasses, ribbon cane syrup or maple syrup in moderate quantities. He warns that corn sugar and glucose, which are found in most breakfast syrups, will produce decay.

ACIDS

Apart from the acid which results from the fermentation of sugars, the dentition is further assailed by acid substances such as lemon juice, soft

drinks, and acid candies which accelerate mechanical wear, particularly wear by brushing. Doctors Stafne and Lovestedt report four findings of common occurrence in instances of loss of structure caused by acid solutions:²⁵ 1) The teeth may be hypersensitive to thermal changes and hygroscopic substances. 2) Often no stain or stain lines are present; teeth look clean. 3) Defects in enamel produced by action of acid solutions usually have rounded margins while, in contrast, defects produced as a result of mechanical wear have sharper margins. 4) Fillings project above the surfaces of the tooth.

These two men point to the dangers of some habits and methods related to the use of citrous fruits (which in themselves are highly nutritive and commendable source of vitamin C), for destruction of tooth substance, presumably by lemons, has been observed mainly in persons who have sucked lemons or who have taken lemon juice in water as an intended therapeutic measure. They have found that sucking lemons can produce marked defects on the labial surfaces of the upper anterior teeth. They report that the rate of decalcification resulting from the interval feedings of lemon juice in water depends upon the individual, decalcification in some individuals commencing a few months after the start of lemon juice intake while in others only after more than a year. In view of its apparent harmful effects on the teeth, whether they become manifested quickly or otherwise, the authors consider it ill-advised to use lemon juice regularly in any appreciable concentration.

Perhaps the advent of the soda fountain and the more recent soft drink dispensing machine has not been without grave effects upon dental hygiene. Most soft drinks contain a high sugar and acid content. Stafne and Lovestedt report that a cola type beverage obtained from a dispensing machine

had a content of phosphoric acid of 10% and pH of 2.6. With individual variation in the rate and amount, a marked destruction of enamel of the molar teeth of rats was observed following daily consumption of this drink. Some persons have an unreasonable craving for certain soft drinks that seems to border on addiction. The dentist should explain to such patients the insidiousness of these innocuous-looking liquids.

Habitual use of acid candies such as cough drops are disapproved for their destructive effects on the teeth. The gingival third areas are found especially susceptible to such confections, resulting in the destruction and undermining of enamel and softening of the exposed dentin.

MINERALS

Calcium, phosphorus, magnesium and fluorine, vitamins A, C, and D are essential to good tooth formation.^{11,26} Calcium is one of the elements in which our diets are most likely to be deficient.^{5,11} For normal children Boyd⁵ recommends an intake of one gram daily which can be assured by consumption of one quart of milk every day during childhood and adolescence. Foods containing calcium rather than concentrates should be used because natural foods are not only more economical but also contain many adjuncts, known and unknown, that improve mineral metabolism. Boyd adds, however, that the body can utilize the inorganic form of calcium after it is converted into a soluble form. It should be remembered that if a diet consists of foods with a predominantly acid ash (meats and cereals), much of the ingested calcium will be diverted towards neutralization of the acid. In human beings, about 5% of the bases of the body, including calcium, is used for this purpose; therefore a preponderance of milk, fruits and vegetables should be given in any mixed diets, in order not only to fur-

nish calcium but also to assist in its efficient utilization by the presence of an excess of the other basic elements.

As yet there is no conclusive proof to substantiate a correlation between calcium and phosphorus intake and caries immunity in the child or the adult.¹⁷ The addition of calcium and phosphorus to the mother's diet does not promote the development of teeth in utero that will be caries resistant.⁹ Dr. Merrill J. Shepro writes however, that calcium or phosphorus deficiency or disturbance of the calcium-phosphorus ratio during the period of tooth formation will be manifest as permanent defects in the calcification of the hard tissues, and will remain throughout the life of the tooth.²⁷ Howe, Bessey and White are of the opinion that an inadequate diet during pregnancy is one of the main factors in dental caries in childhood. During the latter half of this period the mother should therefore ingest 1.5 grams of calcium (about one and one-quarter quart of milk) and 2 grams (about one and one-half quart of milk) daily during lactation.¹¹

There seems to be comparatively little danger of a deficiency of phosphorus so long as the recommended quantity of milk is used.⁵ Variations in phosphorus content of the diet are not as critical as those of calcium, nevertheless, an adequate supply of phosphorus is essential in order to maintain a suitable ratio of Ca:P. The effect of its deficiency can be observed in the calcification especially in the dentin. If the deficiency continues, calcification stops completely in the dentin although the matrix continues to form. Enamel is also prevented from being calcified, resulting in complete failure of hardening of the matrix or of islands of enamel in the uncalcified matrix.²⁸

Becks and Furuta²⁹ have found that the lack of magnesium in the diet seems to have a direct and significant effect on epithelial tissue, resulting, in its extreme form, in complete cessation

of enamel formation. In their experiments with rats they have found that lack of magnesium represents an important factor to be considered in disturbances of enamel formation. They fed a diet deficient in magnesium (13 ppm) and later made a necropsy. Results showed degenerative changes in the enamel epithelium, accompanied by enamel hypoplasia. They also noted enamel pearls and other irregularly calcified substances. Severe folds were observed in the dentin. Krauss⁷ of Newcastle, Australia, reports that persistent deposits of calculus can be minimized by the addition of extra magnesium to the diet. He suggests half a teaspoonful of tribasic magnesium phosphate in half a glass of water three times a day after food.

The daily intake of the above three minerals as recommended by Smith⁷ for average individuals is: calcium, 600 mgs; phosphorus, 375 mgs; and magnesium, 20 mgs.

Of the inorganic substances, the one that caused the greatest stir in recent dentistry is perhaps fluorine. Its presence in human teeth was observed in 1805 by Gay-Lussac and Berthollet.²⁸ In 1931, H. V. Churchill showed this element as the agent possible for mottled enamel when the drinking water contained upward of two parts per million of fluoride.³⁰ Today we know that the presence of up to 1.5 ppm of fluorine in the domestic water supply will not cause dental fluorosis.³¹ In 1941, after studying 7,257 children in twenty-one cities, H. T. Dean et al reported on the relation between dental caries prevalence and fluorine concentrations in domestic water supplies. Their findings showed that the children who used waters containing as little as 1.0 part per million of fluorine experienced only about one-third as much dental caries as comparable groups of children using fluorine-free water.³² Other epidemiological studies have shown that where the water supplies contain fluorine the

dental caries rates are low, while where supplies are fluorine-free the caries rates are high.³³ Such beneficial effect of fluorine was observed in persons who have lived all of their lives in high fluoride areas, or who have lived in these areas at least the first eight or ten years of life.³³ In areas of fluorine-free water supplies, children up to the age of eight years may take bone meal or fluoride tablets.³⁴ But at present, the only adequate dietary source of fluorine seems to be the domestic drinking water in certain communities.¹¹ It is now generally agreed that one part per million of fluorine in the drinking water decreases caries by 65% below average without causing mottled enamel.^{34,35,11}

In Canada, Brantford, Ontario, first undertook to add sodium fluoride to its water supply in June, 1945.³⁵ A fluorine concentration of 1.0 and 1.2 ppm has been maintained in the water supply continuously since that time. Although sufficient time has not elapsed to give conclusive evidence at this stage, certain findings of the survey made in 1951 indicate a reduction in caries in Brantford children.

VITAMINS

Rowe Smith writes, "Because of generalized soil depletion, which is reflected in food, and a great loss of nutrient value due to faulty methods of cooking, multiple mineral and vitamin supplements should be taken to reinforce the daily diet."⁷⁷ Since it is almost impossible to obtain adequate amounts of vitamin D from food and from sunshine, he recommends the use of supplements or sun lamps. Deficiency in this vitamin has no influence in the incidence of caries of the teeth but nevertheless it plays an important part in the calcification of hard tissues of mesenchymal origin.²⁷ In hypovitaminosis D, defective calcification may appear in the dentin, cementum, and bone, but not in the enamel which is ectodermal

in origin. Deficiency in vitamin D, therefore, does not affect either the formation or the calcification of the enamel. Shepro²⁷ is of the opinion that the hypoplasia of enamel that is sometimes associated with clinical rickets probably results from other coexisting nutritional insufficiencies. Pitts¹⁰ expresses a similar view for he doubts that hypoplasia of the human teeth results from a lack of vitamin D although hypoplasia of the animal teeth can be produced or prevented at will by giving or withholding this vitamin. It is known, however, that vitamin D increases utilization of calcium and phosphorus by the body and favours sound formation of the alveolar bone.³

In their experiment carried on in a New York city school with about two hundred resident children through 230 days, McBeath and Verlin¹⁵ found that artificially irradiated substances were less effective in caries prevention than vitamin D occurring naturally in cod liver oil. According to their findings, vitamin D of cod liver oil is roughly two to three times more effective per unit than viosterol in the prevention of caries. They report that 400 units of cod liver oil vitamin D decreased the caries incidence by more than one-half compared to the control. Its beneficial effect is apparent and should be given to children from October through April when the skin face and hands show tanning.³ As mentioned earlier, children between the ages of three and ten seem to benefit more than those between eleven and sixteen.¹⁵ Milk, egg yolk and butter are excellent sources of this vitamin.

Since hypovitaminosis A especially affects the formation of enamel, vitamin A is of particular importance in the prenatal period and in childhood up to eight years when enamel is being formed. Howe, Bessey, and White feel that a deficiency in this vitamin during the formation of human teeth outranks all other vitamin deficiencies in importance.²⁴

The use of cod liver oil in childhood assures sufficient amount of vitamin A as well as D. Beef liver is an excellent food source of vitamin A, while others such as cream, butter, cheese and egg yolk are also good animal sources. Leafy green vegetables, carrots, pumpkin, sweet potatoes, cantaloupe, dried apricots and watermelon are good plant sources.

In vitamin C deficiency, mainly the connective tissues are affected.^{20, 27} Dentin, cementum, periodontal membrane, and the bone are therefore the tissues that are involved. The odontoblasts either cease to form dentin or form dentin of inferior quality and the bone-forming osteoblasts react similarly. Howe, Bessey, and White recommend for children between four and ten years of age a daily intake of three ounces of orange or grapefruit juice or six ounces of tomato juice (or the equivalent in whole fruits). For the average older child who is in normal health they suggest four ounces of orange or grapefruit juice. There is no danger from excess.

The importance of diet replete with essential nutrients cannot be over-emphasized; other things being equal, adequate diet will help develop a healthy body and this includes good teeth. But vitamin therapy alone should not be relied upon, for without dietary adjustment as well, it may prove harmful to the patient.¹⁶ Not all the essential nutrients have been isolated chemically, so that reliance on pills or capsules, at the expense of a wholesome dietary intake, can prove harmful. What is essential is a balanced diet containing in adequate amounts what the body requires: proteins, minerals, vitamins, fats, and carbohydrates. The action of supplementary vitamins is greatly decreased if essential food elements are not in the daily diet for them to act on.⁷

PROTEINS AND FATS

There is a strong belief that the ex-

planation of caries control lies in the furtherance of complete and optimum nutrition, thereby offering the teeth full opportunity to resist destructive agencies.²⁰ The so-called protective factors found in milk, eggs, vegetables, and fruits (and cod liver oil) are believed to favour tooth preservation. According to Roworth¹¹ the following foodstuffs contain complete or high quality proteins: milk, eggs, cheese, meat, fish, poultry, soybeans, and certain nuts. They are termed complete or high quality since they contain all the ten essential amino acids necessary to maintain both life and growth.

That people who eat much fat are relatively free from caries has been mentioned by J. Sim Wallace.³⁷ He points out that Eskimos who subsist mainly on fats are peculiarly free from caries and that teeth covered with a film of fat are less readily affected by caries than when they are uncoated. Ingestion of fat is helpful in another way—sufficient fat in meals, particularly at breakfast and lunch, decreases between-meal hunger and aids in reducing between-meal snacks of concentrated sweets which increase the caries rate.^{16, 34} Excellent animal sources of fats are: cream, butter, fat of meats, lard, fish oils, and lecithin in egg yolk. Vegetable oils are taken from olives, corn, cotton seed, coconuts, soybeans, chocolate, nuts, and avocados.¹⁰ But as pointed out earlier, we already seem to ingest more fat than is necessary.

CONCLUSION

I have attempted to show that there is every indication to believe that a definite relation exists between diet and dental health, and that the key to preventive dentistry, as it concerns dental caries, may lie in the field of nutrition. But to gain significant results from diet, it must first be observed by the mother during her pregnancy and optimum dietary measures must be continued in the child's daily regimen

after birth up to the age of about ten. Since the average young mothers of our day usually possess keen interest in their children's general health, the dentist should not find much difficulty in convincing them of the equal importance of their dental health. However, I believe that the subject has to be presented to them in a comprehensive manner with firm conviction on the part of the dentist. He must show that he is interested not only in the dental but in the general health of the child as well, and that he can help them to enjoy health. Poor neglected teeth are a grave threat and handicap to the health of a growing child whose nutritional demands are relatively high. To prevent such a condition should be the prime concern of every dentist. The modern dentist is not just a dental repair-man; he is well aware of the fact that it is more important to prevent than to repair dental damages after they have run their gamut, leaving in their wake much suffering and injury. Good up-to-date literature is available on the subject of diet, nutrition, and dental health. The dentist should read and study it and apply his knowledge in his practice. "A healthy tooth does not decay."

For general reference, I should like to reproduce here the table of a weekly diet for a ten-year old recommended by J. D. Boyd:⁵

Milk	7 quarts
Eggs	7
Meat, lean	16 oz.
Vegetables, leafy	7 4-oz. servings
roots, seeds	7 4-oz. "
Potatoes, medium	7
Fruit	14 4-oz. servings
Flour & Cereal products	1 lb.
Sugar & its products	1 lb.
Butter & other fats	7 oz.
Cod liver oil	7 drams

The following figures represent relative content of certain protective factors in the foregoing diet, considering the content of the prescribed diet as 100% (daily):

Vitamin A	11,000 U.
" B1	340 U.
" C	170 mg.
" D	500 U.
" B2	4.25 mg.
Calcium	1.5 Gm.
Protein	2,450 Cal.
Calories	68 Gm.

BIBLIOGRAPHY

1. Journal of Dentistry for Children, Second Quarter, 1951, P. 5, Hugo M. Kulstad, D.D.S., Dentistry for Children is on the March.
2. Dental Cosmos, January, 1932, Vol. LXXIV, No. 1, P. 45, Carl P. Sherwin, M.D., ScD., Dr.P.H., LL.D., Relation of Metabolism to Dentition.
3. Journal of American Dental Association, June, 1950, Vol. 40, No. 6, P. 666, Louis J. Baume, Dr.Med. Dent., H. Becks, Dr.Med.Dent., D.D.S., Preventive Dentistry.
4. Journal of American Dental Association, May, 1943, Vol. 30, No. 9, P. 670, Julian D. Boyd, M.D., Prevention of Dental Caries in late Childhood and Adolescence.
5. Journal of American Dental Association, May, 1940, Vol. 27, No. 5, P. 750, Julian D. Boyd, M.D., Role of Diet in the Control of Dental Caries.
6. American Journal of Diseases of Children, October, 1929, Vol. 38, No. 4, P. 721, Boyd, Drain & Nelson, Dietary Control of Dental Caries.
7. Dental Digest, May, 1948, Vol. 54, No. 5, P. 204, Rowe Smith, D.D.S., Guide of Proper Daily Food Selection.
8. Practical Pedodontia or Juvenile Operative Dentistry and Public Health Dentistry, F. E. Hogeboom, D.D.S., F.A.C.D., Published 1946 by C. V. Mosby Co.
9. Journal of Dentistry for Children, Second Quarter, 1952, P. 96 (Questions and Answers), An Evaluation of Calcium and Phosphorus Medication in Dentistry.
10. Dental Cosmos, April, 1932, Vol. LXXIV, No. 4, P. 340, A. T. Pitts, D.S.O., M.R.C.S., L.R.C.P., L.D.S., Dental Prophylaxis and Care of Children Under Six years of Age.
11. Nutrition and Dietetics in Dental Health, P. 73, Ruth Hazel Roworth, B.A., B.S., M.Ed.
12. Journal of American Dental Association, December, 1948, Vol. 37, No. 6, P. 676, Reidar F. Sognnaes, D.M.D., Ph.D., Caries Conductive Effect of a Purified Diet when Fed to Rodents during Tooth Development.
13. Dental Items of Interest, April, 1949, Vol. 71, No. 4, P. 383, J. Sim Wallace, M.D., D.Sc., F.D.S.R.C.S., Newer Knowledge of Hygiene in Diet.

14. Dental Caries, edited by Kenneth A. Easlick, A.M., D.D.S., The Effectiveness of an Adequate Diet in the Control of Dental Caries, chapter by Genevieve Stearns, Ph.D., Research Professor of Pediatrics, University of Iowa College of Medicine, Iowa City, Iowa (1948).
15. Journal of American Dental Association, August, 1942, Vol. 29, No. 11, P. 1393, E. C. McBeath, D.D.S., B.S., M.D., and W. A. Verlin, A.B., D.D.S., Further Studies on the Role of Vitamin D in the Nutritional Control of Dental Caries in Children.
16. Journal of Dental Medicine, July, 1952, Vol. 7, No. 3, P. 74, Louis B. Kelsten, D.D.S., Preventing Tooth Decay in Children.
17. Dental Items of Interest, November, 1948, Vol. 7, No. 3, P. 1092, H. H. Neumann, M.D., Changes in Caries Susceptibility.
18. British Dental Journal, March 6, 1951, Vol. XC, No. 5, P. 117, G. Neil Jenkins and Donald E. Wright, Role of Ammonia in Dental Caries: Effect of Ammonium Salts and Urea on Salivary Organisms.
19. Journal of American Dental Association, July, 1951, Vol. 43, No. 1, P. 26, L. S. Fosdick, W. E. Ludwick, C. W. Schantz, Absorption of Enzyme Inhibitors and Antibiotics in Dental Plaques.
20. Dental Items of Interest, May, 1949, Vol. 71, No. 5, P. 452, J. Sim Wallace, M.D., D.Sc., F.D.S.R.C.S., Newer Knowledge of Hygiene in Diet.
21. Journal of American Dental Association, August, 1952, Vol. 45, No. 2, P. 193, Samuel Dreizen, D.D.S., and Tom D. Spies, M.D., The Incidence of Dental Caries in Habitual Sugar Cane Chewers.
22. Journal of American Dental Association, July, 1947, Vol. 35, No. 1, P. 1, Schour and Massler, Dental Caries Experience in Postwar Italy (1945): I. Prevalence in Various Age Groups.
23. Journal of American Dental Association, May, 1951, Vol. 42, No. 5, P. 491, Basil G. Bibby, D.M.D., Ph.D., Hyman J. Goldberg, D.M.D., and Eugene Chen, D.D.S., Evaluation of Caries-producing Potentialities of Various Foodstuffs.
24. American Journal of Orthodontics and Oral Surgery, April, 1945, P. 230, J. D. Boyd, M.D., Prescribed Diets for Normal Children.
25. Journal of American Dental Association, May 1, 1947, Vol. 34, No. 9, P. 586, Edward C. Stafne, D.D.S., and Stanley L. Lovestadt, D.D.S., Dissolution of Tooth Substance by Lemon Juice, Acid Beverages and Acids from Some Other Sources.
26. Journal of American Dental Association, July, 1941, Vol. 28, No. 7, P. 1089, Percy R. Howe, D.D.S., Otto A. Bessey, Ph.D., and Ruth L. White, B.S., Practical Nutritional Suggestions for Dentists.
27. Journal of American Dental Association, November, 1951, Vol. 43, No. 5, P. 543, Merrill J. Shepro, D.D.S., Oral Manifestations of Metabolic Disturbances.
28. Biochemistry of the Teeth, Henry M. Leicester, Ph.D., published by C. V. Mosby Company, 1949.
29. Journal of American Dental Association, July, 1941, Vol. 28, No. 7, P. 1083, Herman Becks, Dr.Med., Dr.Med.Dent., D.D.S., and William J. Furuta, A.B., M.S., Effect of Magnesium Deficient Diets on Oral and Dental Tissues.
30. Operative Dentistry, G. V. Black, 18th Edition, Volume I, P. 243.
31. Dental Caries, edited by Kenneth A. Easlick, A.M., D.D.S., An Evaluation of the Effectiveness as Caries Control Measures of Ingested Fluorides in Water, Food, Bone Flour, and Proprietary Preparations, chapter by Francis A. Arnold, Jr., B.S., D.D.S.
32. Journal of American Dental Association, May 15, 1947, Vol. 34, No. 10, P. 690, Editorial, Fluorination of Drinking Water.
33. Journal of American Dental Association, June 1, 1947, Vol. 34, No. 11, P. 719, Willard R. Beltinger, D.D.S., M.P.H., The Dental Implications of Fluorine. A Review of the Literature.
34. Dental World, First Quarter, 1952, Vol. 7, No. 1, P. 52, Alfred Kantorowicz.
35. Journal of Canadian Dental Association, April, 1952, Vol. 18, No. 4, P. 200, H. K. Brown, D.D.S., D.D.P.H., Mass Control of Dental Caries by Fluoridation of a Public Water Supply.
36. Journal of American Dental Association, November, 1951, Vol. 43, No. 5, P. 583, Neal W. Chilton, D.D.S., M.P.H., Nutritional Aspects of Periodontal Therapeutics.
37. Dental Items of Interest, November, 1948, Vol. 70, No. 11, P. 1118, J. Sim Wallace, M.D., D.Sc., F.S.C.D., F.D.S.R.C.S., The Newer Knowledge of Hygiene in Diet.

Paediatricians in many countries have reported evidence that mercury administered to infants and young children may result in serious illness and may even cause or contribute to their death. Unfortunately the giving of teething powders is a tradition that dies hard, and indeed is often carried out simply because teething is expected, without the baby showing any discomfort or distress. As a result mercury may be given continually over long periods, with proportionate risks of mercury intoxication. Many paediatricians accept mercury as an important factor in the causation of pink disease, and there is evidence that mercury given in the form of teething powders can have a disastrous effect on the kidneys.

The administration of calomel or grey powder to infants was accepted medical practice in the past, but the use of mercury by mouth in any form has no place in modern paediatric practice. Some varieties of teething powders do not contain mercury, and are therefore free of its dangers. By eliminating mercury from teething powders this potential threat to children would be effectively removed.

An evaluation of technique for condensing amalgam restorations*

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One of the characteristics of the dental profession is a periodic demand for a new way to do the old. Most of us crave new techniques, instruments, and materials more than we do a better understanding of the principles behind those procedures in vogue. One of the oldest and certainly most frequently performed procedures in modern dentistry is the packing of amalgam fillings and there is little wonder why the introduction of a so-called "automatic" instrument for this purpose about fifteen years ago received acceptance among many practitioners. With amalgam admittedly the most frequently abused material in operative dentistry many quite naturally were more eager to place their confidence in a new mechanical gadget believed to produce superior amalgam fillings than to adhere to sound basic principles throughout the chain of their amalgam technique, failing to realize that condensation is but one link of that chain.

A number of men (1-6) have recommended mechanical condensers in the literature but most of this has been personal testimony only. Hollenbeck developed the pneumatic condenser for gold foil and Sweeny was one of the first to adapt it to the condensation of amalgam by designing plugger points of various shapes and sizes to fit this instrument and through his prolific writings (7-10) perhaps did more to popularize mechanical condensers than any other man.

He compared restorations clinically that had been fabricated by hand from amalgam mixed in a mortar and pestle with others built from mechanically triturated and condensed material and

concluded that in his hands the mechanical aids produced the better results. He packed specimens with the pneumatic condenser of mechanically triturated amalgam that had over 40% higher crushing strength than data given by the manufacturer of the alloy. Although Sweeney contributed much to the improvement of amalgam technique it is hard to accurately evaluate the mentioned work for several reasons. First, it is impossible to determine how much of the increased strength he obtained was due to the more thorough trituration with the amalgamator and how much can be attributed to the pneumatic condenser. Secondly, no direct comparison was made between specimens properly condensed by hand and by mechanical means under the same conditions of testing as well as manipulation. Romnes (11) also suggested the pneumatic condenser in a paper, but only on the strength of the previously described work by Sweeney.

Other essayists (12-15) on amalgam have concluded that equally as good results can be obtained with hand packing and Markley (16) is very critical of any type of mechanical condenser. He warns of the habitual danger of the mallet type instrument's fracturing enamel margins and feels that the vibrator type does not condense and adapt the material to the cavity but merely continues trituration thus causing possible shrinkage of the final restoration. Miller (17) has expressed this same fear in the use of the mechanical or air actuated mallet and likewise believes that vibrating condensers continue trituration in the cavity. (18).

Both men are justified in warning of the chance of marginal injury with the mallet type condenser and a vibrating

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instrument undoubtedly continues trituration, but due to the inability of several investigators (6, 19-21) to demonstrate shrinkage clinically and the fact that most alloys fail to expand the 3 microns per centimeter required by the present American Dental Association Specification No. 1 when thoroughly mixed in a mechanical amalgamator (22), a device used by both the mentioned clinicians, the opportunity for contraction does not appear to be an acceptable grounds for condemnation of the vibrating instrument. A more salient basis for criticism is Markley's observation that this condenser fails to condense and adapt the material to the irregularities of the cavity and thus remove all voids which would be rich in mercury. I have noted a tendency in the use of this gadget for mercury to collect at the all-important margins of the cavity due to the jarring rather than compression of the amalgam.

While experiments have been run to determine possible difference in total mercury content of specimens packed by hand and by mechanical means there is need for analytical work to ascertain possible differences in mercury content of these all-important margins of the restoration and Phillips (23) plans such a study in the future. Stradder (24) was on the right track in demonstrating the variations in dimensional change and flow between portions of a restoration packed with a mercury rich consistency and with a dry mix but the more critical study of the marginal areas is indicated.

In 1944 Phillips (22) published the results of perhaps the most comprehensive study of the pneumatic condenser that has been made in the laboratory. He tested 15 different alloys for differences in physical properties between specimens packed by hand and by the Hollenbeck condenser. He found little or no difference in flow, dimensional change, or 24 hour crushing

strength but a tendency for a slight increase in 1 hour crushing strength for pneumatically condensed specimens, which he admitted is probably of academic interest only. Of the 15 alloys tested, 7 had 1 hour strength improvements of 1000 lbs. per square inch or more and 2 alloys lost this much strength or more. The other 6 alloys had approximately the same 1 hour strength when condensed in either manner.

Phillips believes that this slight increased 1 hour strength may be due to the removal of a little more mercury by the pneumatic instrument, however, in a later study aided by Boyd (25) he was unable to demonstrate any appreciable difference in the amount of volatilized mercury in specimens packed either way when these specimens were placed in a furnace for 45 minutes. Likewise another group of investigators (26) were unable to find any consistent difference in mercury content between specimens that varied markedly in 1 hour strength as related to the mode of condensation.

Taylor and his co-workers (27) conducted a study in 1948 of the effect of various manners of condensation on the ultimate (7 days) strength of 5 different alloys. This series of tests included hand packing, mechanically actuated mallet condensing at 3 different packing forces, vibrator type condensing at 3 different speeds of the dental engine, and pneumatically actuated condensing. They found no improvement in ultimate crushing strength with any of these three type mechanical condensers over hand packing.

The poorest results were obtained with the vibrator type condenser. Unless the dental engine were operated at a high speed and only a small packing thrust (2 lbs.) applied the specimens obtained were decidedly weaker than those packed by hand. Heavier pack-

ing thrusts than this stopped the vibration completely. When operating the dental engine at a slow speed all five alloys developed less strength than when hand-packed. The loss in strength varied from 3000 lbs./sq. in. to better than 8000 lbs./sq. in., the latter representing a loss of over one fourth of the ultimate strength of the material. Strength improved as speed of the dental engine was increased but failed to equal that obtained by hand.

With the mechanically actuated mallet unless thrusts were made approximately equal to that used in acceptable hand packing there was a loss in ultimate strength. The specimens prepared with the pneumatic instrument were about equal in crushing strength to those packed by hand.

On the basis of the work reviewed thus far your essayist concluded in a paper in June, 1950 (14) that save serving as a convenience for some operators mechanical condensers do not produce amalgam restorations superior to those packed properly by hand, and for the reasons already explained I personally favor hand condensation. In visiting the offices of several careful operators who advocate one of the mechanical condensers I found that almost without exception they all did their initial packing and adapting with hand pressure due to the admitted difficulty of condensing small increments with any of the mechanical devices. The mechanical condenser was used only to build the succeeding portions of the filling and for the overpack. In July, 1952, I repeated my earlier conclusion in a similar article. (15)

Two months later a report was published in the *Journal of the American Dental Association* of a study conducted at the Bureau of Standards which undoubtedly confused many dentists. Ryge and his co-workers (26) tested 2 alloys for the effect of mechanical condensation on their physical properties. They prepared speci-

mens by hand, by a U.S. manufactured mechanically actuated condenser, by a Swedish manufactured mechanically actuated condenser, and by a pneumatically actuated condenser. They obtained a 62% increase in 1 hour strength with the U.S. mechanical condenser and an 81% increase with the Swedish instrument over hand packing. They failed to give results of a 1 hour test with the pneumatic type condenser.

After 4 hours the specimens prepared with both the U.S. and the Swedish mechanical condensers developed about 45% more strength than those packed by hand while the specimens built with the pneumatic condenser possessed exactly the same strength as those condensed by hand. At the end of 24 hours the U.S. and Swedish mechanically condensed specimens were over 40% stronger and the pneumatically condensed specimens were 29% stronger than the hand packed ones. Their data are summarized in Table 1.

Mode of Condensation	One Hour Strength lbs./sq in	Four Hours Strength lbs./sq in	24 Hours Strength lbs./sq in
Hand Packed (12 thrusts) . . .	8000	29000	34000
U.S. Mechanical Packed	13000	42000	49000
Swedish Mech. Packed	14500	43000	48500
Pneumatically Packed	xxx	29000	44000

TABLE 1.
(Summary of results of tests by Ryge, Gannar et al, J.A.D.A. 45: 269-277 (Sept.) 1952.)

At first glance it would seem difficult to explain how this group of workers could obtain such a prodigious increase in strength over hand packing with the mechanical condensers and also why the 4 hour strength of specimens mechanically condensed would be 40% greater than those prepared with the air actuated instrument, since their data did not approach the results of previous investigators which we have already reviewed. We therefore decided to evaluate the work of Ryge and his co-workers as thoroughly as possible and then run some crushing strength tests ourself.

Taylor (27) has demonstrated that a linear dimensional difference in similarly proportioned specimens will alter their crushing strength readings. A specimen 8mm. long and 4mm. in diameter will have a higher compression strength than one 12mm. long and 6mm. in diameter for example. In checking the size specimens used by the different investigators we found that both Taylor and Phillips used ones 8mm. x 4mm. in dimensions while Ryge's were 8.5mm. x 5mm. and thus we may anticipate no difference in strength readings of specimens similarly condensed on this basis. Taylor likewise has shown that the more rapidly the load is applied to the specimen the greater will be the resistance to compression. Taylor crushed his specimens at the rate of 15,000 lbs./sq. in./minute; Phillips, his at 22,000 lbs./sq. in./minute; and Ryge his at 21,000 lbs./sq. in./minute. Therefore we may not anticipate differences in strength readings for specimens similarly condensed because of variations in compression rates. Taylor compressed his specimens so slightly slower than the others that it is of little significance.

In analyzing the strength readings obtained by Ryge we noted that the wide variance in the strength of hand packed specimens and mechanically condensed ones is not due to unusually high values for the latter but due to unusually low ratings for the former. In the amalgamation of the alloy and mercury Ryge mixed 30 grains of alloy with its appropriate weight of mercury on a 5:8 ratio in a Crescent Wig-L-Bug amalgamator for 10 seconds. Taylor (28) has undoubtedly done the most comprehensive research on the mechanical characteristics of electrical amalgamators and he found that mixes much larger than about 12 grains of alloy were undertritured with this brand of machine. Nelson confirmed this in Caulk's laboratories (29). While it is realized that the correct tritura-

tion time will vary with individual alloys and individual amalgamators of the same make, we find that it requires about 8-10 seconds to triturate a 12-15 grain mix of most fine cut alloys with this machine. Regular cuts usually take a little longer. (30,31) Ryge used one fine and one regular cut alloy.

In other words he mixed about twice the amount of amalgam recommended for the Crescent Wig-L-Bug amalgamator and mixed it about the same length of time required to properly triturate a mix half the size. His specimens were evidently prepared with undermixed amalgam which will greatly reduce the crushing strength of the material. (32)

The hand condensation used to prepare specimens for comparison with mechanically condensed ones consisted of utilizing a 2mm. diameter plugger with a force of 6 lbs., using only five increments to fill a mould 10mm. x 5mm. in size and exercising 12 thrusts to the increment. In other words only 5 increments were used to condense an amount of amalgam equal to approximately three Class II restorations in bicuspid or two in molars. After conducting dimensional change tests these specimens were cut down to the 8.5mm. x 5mm. size used for determining the crushing strength. The specimens prepared by hand were evidently not only built of undermixed amalgam but were very poorly packed as well which also will reduce the strength of the amalgam. An example of how undermixed and poorly condensed they were is revealed in another set of specimens prepared in exactly the same manner again using only five increments but increasing the number of thrusts from 12 to 40 per increment. This increased working of the mould resulted in a 28% increase in 4 hour strength and a 25% increase in 24 hour strength. (Table 2) Obviously 40 thrusts per increment is clinically impractical, but this continued working of the material

in the mould did compensate in part for the undermixing of the material.

Mode of Condensation	Four Hours Strength lbs/sq in	24 Hours Strength lbs/sq in
Hand Packed (12 thrusts).....	29000	34000
Hand Packed (40 thrusts).....	37000	40000

TABLE 2.

(Summary of results of tests by Ryge, Gummer et al, J.A.D.A. 45: 269-277 (Sept.) 1952.)

In using the mechanical condensers this group of workers used nine increments rather than five to fill the mould, operated the dental engine at 5800 rpm, and took 3 to 4 minutes longer to condense each specimen than when hand packed. The clinical applicability of operating one of these mechanical mallets in a vital tooth at 5800 rpm is questionable. Most manufacturer's directions warn against using the instrument at anything other than a slow to medium rate of dental engine speed. Condensation pressure is to be increased by increasing the hand thrusts and not by stepping up the dental engine speed as shown by Taylor and his co-workers. (27)

In preparing the specimens by mechanical condensers Ryge et al evidently continued to work the material in the mould until the lack of proper trituration was compensated for and thus obtained normal crushing strength values. However the clinical applicability of the technique employed is questionable. The same undermixed amalgam was used for the hand packed specimens but these were poorly condensed and thus unusually low strength was developed.

As further evidence that the difference in strength obtained is directly related to the undermixing and poor packing we have only to examine the dimensional changes obtained. Phillips (22) tested the dimensional change of 20 different alloys when mixed in a Crescent Wig-L-Bug to the consistency recommended by the manufacturers and hand packed. Of the 20 alloys tested only 2 expanded over 1 micron

per centimeter and 15 contracted. All the specimens hand packed by Ryge et al expanded up to 14 microns per centimeter with an average of 7 microns while all but one operator's specimens contracted when the U.S. mechanical condenser was used and all operator's specimens contracted 11 microns when the Swedish instrument was employed. It has long been established that either undermixing or light packing results in increased expansion.

The reason that such a low 4 hour strength was obtained with the pneumatic condenser is evidently because the amalgam was not as thoroughly worked in the mould. Six increments rather than nine were used to fill the mould and the fact that all operator's specimens expanded 3-7 microns shows that the material was not as thoroughly worked as with the mechanically actuated instruments.

In our tests specimens were prepared in an 8.00mm. x 4.01mm. diameter mould by hand, by mechanically actuated condenser (Mid West), and by air actuated condenser (Hollenbeck). Specimens were stored at room temperature (70°—80°F.) and crushed on a Tinius Olsen machine loaded at a compression rate of 22,000 lbs./sq. in./minute. Results given are an average of six specimens. Mixing was done in a Crescent Wig-L-Bug amalgamator employing a metal capsule. One series of specimens was prepared with amalgam mixed according to the manufacturer's directions and one series with a material slightly more thoroughly triturated, which we favor for clinical use. (31) In each case 15 grains of alloy and 24 grains of mercury were employed using the same batch number for all specimens. When mixing by manufacturer's directions a 10 second period was used while a 13 second period was used for the more thorough trituration. Excess mercury was expressed by squeeze cloth before start of condensation and from 12 to 16 in-

crements were used to fill each mould. Hand packing was done with a 1mm. diameter plugger until the top of the mould was reached and then a 3mm. diameter was used for the overpacked, exercising an appropriate 7-8 lbs. thrust, with about 12 thrusts per increment.

The 1 hour crushing strengths developed are given in Table 3 and the 24 hour strengths in Table 4. For both time intervals the mechanically condensed specimens exhibited about 1000 lbs./sq. in. more strength than those packed by hand and the pneumatically condensed possessed slightly less strength than the mechanically condensed ones.

Mode of Condensation	Degree of Trituration	One Hour Strength lbs/sq in
Hand Packed.....	Mfg. Directions	11800
Mechanically Packed.....	Mfg. Directions	13100
Pneumatically Packed.....	Mfg. Directions	12500
Hand Packed.....	More Thoroughly	12900
Mechanically Packed.....	More Thoroughly	14100
Pneumatically Packed.....	More Thoroughly	13600

TABLE 3.

Mode of Condensation	Degree of Trituration	24 Hours Strength lbs/sq in
Hand Packed.....	Mfg. Directions	45100
Mechanically Packed.....	Mfg. Directions	46900
Pneumatically Packed.....	Mfg. Directions	46200
Hand Packed.....	More Thoroughly	46800
Mechanically Packed.....	More Thoroughly	48000
Pneumatically Packed.....	More Thoroughly	47200

TABLE 4.

These results coincide with the earlier findings of Phillips and Taylor. It will be noted that there was an increase in both 1 hour and 24 hour strength for all three modes of condensation when the amalgam was thoroughly triturated. Amalgam manipulated thusly also has better working characteristics, carves easier and smoother, and takes and maintains a polish better. (19,20,32,33)

CONCLUSIONS:

1. Mechanically actuated and air actuated condensers produce speci-

mens that have slightly greater 1 hour and 24 hour crushing strengths than those packed by hand. This difference is most probably of academic interest only.

2. While mechanically condensers serve a convenience to some operators they are a nuisance to others due to the inconvenience and loss of time in changing size and shape of plugger points during condensation.

3. There is an habitual danger of fracturing enamel margins with the mallet type condenser and most clinicians feel that the vibrating type fails to adapt and condense the amalgam within the irregularities of the cavity.

4. Initial condensation is difficult with any type mechanical condenser and many use hand packing followed by the use of a mechanical instrument.

5. The choice between hand and mechanical condensation appears to be one of personal clinical preference only.

The author wishes to express his sincerest thanks to Doctor Maynard K. Hine, Dean, and Prof. Ralph W. Phillips, Associate Professor of Dental Materials, Indiana University, School of Dentistry for their cooperation in conducting the crushing strength tests for this paper.

BIBLIOGRAPHY

1. Kilpatrick, H. C., Elimination of Variables in Amalgam Manipulation, D. Digest 49: 76-78 (Feb.) 1943.
2. Link, W. A., Meeting Operative Demands of To-day with Standardized Amalgam Technic, Fortnightly Rev. Chicago D. Sec. 17:7-11 (Jan. 2) 1949.
3. Graham, C. H., Some Observations on Amalgam Technic and Their Application, D.J. Australia 13: 439-448 (Oct.) 1941.
4. Harvey, Warren, Dental Materials with Special Reference to Fillings, D.Gaz. 13: 565-569 (June) 1947.
5. Tingley, H. E., Clinical Use of Amalgam, D.Items Int. 62: 608-624 (July) 1940.
6. Shepherd, I. M., Condensation of Silver Amalgam with Electric Mallet, D. Items Int. 58: 856 (Oct.) 1936.
7. Sweeney, James T., Uncontrolled Variables in Amalgam, with Significant Improvement in Making Restoration, J.A.D.A. 27: 190-197 (Feb.) 1940.

8. Sweeney, James T., Amalgam Manipulation: Manual vs. Mechanical Aids, J.A.D.A. 27: 1940-1949 (Dec.) 1940.
9. Sweeney, James T., Clinical Manipulation of Amalgam by Mechanical Means, Tex. D.J. 59: 368-371 (Nov.) 1941.
10. Sweeney, James T., Clinical Manipulation of Amalgam by Mechanical Means, J. Colo. D.A. 20: 6-10 (Sept.) 1941.
11. Romnes, Arne F., Practical Suggestions in Use of Amalgam, Ill. D.J. 9: 270-277 (Aug.) 1940.
12. Thom, L. W., Fundamentals of Amalgam Restorations, Pa. D.J. 17: 5-14 (Oct.) 1913.
13. Miller, E. Carl, Construction of the Amalgam Restoration J. Canadian D.A., 18: 119-127 (1952).
14. Mosteller, John H., The Principles of Condensation of Amalgam, Ga. D.J. 24: 10-14 (July) 1950.
15. Mosteller, John H., The Principles of Condensation of Amalgam, J. Tenn. D.A. 32: 293-299 (July) 1952.
16. Markley, Miles R., Restorations of Silver Amalgam, J.A.D.A. 43: 133-146 (Aug.) 1951.
17. Miller, E. Carl, Personal Communication, (Feb.) 1952.
18. Miller E. Carl, Building the Amalgam Restoration, J. Mich. D.Sec. 28: 113-119 (June) 1946.
19. Phillips, Ralph E.; Boyd, Drexel A.; Healey, Harry J.; and Crawford, W. H., Clinical Observation on Amalgam with Known Physical Properties, J.D. Res. 22: 167-172 (June) 1943.
20. Miller, E. Carl, Clinical Factors in the Use of Amalgam, J.A.D.A. 34: 820-828 (June) 1947.
21. McDonald, Ralph E. and Phillips, Ralph W., Clinical Observation on a Contracting Amalgam Alloy, J.D. Res. 29: 482-485 (Aug.) 1950.
22. Phillips, Ralph W., Physical Properties of Amalgam as Influenced by the Mechanical Amalgamator and Pneumatic Condensor, J.A.D.A. 31: 1308-1328 (Oct.) 1944.
23. Phillips, Ralph W., Personal Communication, (Oct.) 1952.
24. Stradder, K. H., Amalgam Alloy: Its Heat Treatment, Flow, Mercury Content, and Distribution of Dimensional Change, J.A.D.A. 38: 602-608 (May) 1948.
25. Phillips, Ralph W. and Boyd, Drexel A., Importance of Mercury: Alloy Ratio in Amalgam Fillings, J.A.D.A.; 34: 451-458 (April) 1947.
26. Ryge, Gunnar; Dickson, George; Smith, D. L.; and Schoonover, I. C., Dental Amalgam: The Effect of Mechanical Condensation on Some Physical Properties, J.A.D.A. 45: 269-277 (Sept.) 1952.
27. Taylor, N. O.; W. T.; Mahler, D. B.; and Dinger, E. J., The Effect of Variable Factors on Crushing Strength of Dental Amalgams, J.D.Res. 28: 228-241 (June) 1949.
28. Taylor, N. O.; Sweeney, W. T.; and Mahler, D. B., Some Mechanical Characteristics of Amalgamators, J.D.Res. 29: 396-400 (June) 1950.
29. Nelson, Clyde, L. D. Caulk Laboratories, Milford, Delaware, Form No. TCA-106.
30. Mosteller, John H., An Evaluation of the Fine Cut Silver Alloys, Bul.Ala.D.A. 33: 11-13 (Oct.) 1949.
31. Mosteller, John H.; An Evaluation of the D.A. Specification for Amalgam Alloy in Relation to Particle Size, Annals of Dentistry, 12: 19-24 (March) 1953.
32. Mosteller, John H., Amalgam Mixing, D.Survey 27: 1410-1412 (Oct.) 1951.
33. Mosteller, John H., The Finishing of Alloy Restorations, D.Digest 56: 15-17 (Jan.) 1950.

Good removable partial dentures are the results of:

1. A thorough, general examination of the mouth with roentgenograms.
2. A thorough prophylaxis, and the treatment of, and removal of all questionable teeth.
3. The repair of carious lesions.
4. Obtaining a preliminary impression and study casts and articulating them.
5. Drawing a tentative design on study casts, preparing occlusal rests and teeth by grinding.
6. Obtaining an accurate impression after all teeth are prepared.
7. Remembering that the basis for all successful partial dentures is summed up in the words **plan—design—construct**.

Colonel Arthur H. Schmidt 'Planning and Designing Removable Partial Dentures'.
The Journal of Prosthetic Dentistry, November 1953.

Teeth for dentures differ so radically from natural teeth in the firmness of their attachment to the jaw that special designs are required to help stabilize them during chewing.

The development of special occlusal patterns for denture teeth awaits the application of engineering methods by competent industrial designers under dental supervision. It can be predicted that the result of their efforts will be a "functional design", notable for "Fitness for use" under realistic conditions. Such a functional design will minimize the displacement of denture bases (especially the lower) which is so traumatic to the alveolar mucosa during mastication.

M. A. Pleasure, 'Anatomic Versus Nonanatomic Teeth'.
The Journal of Prosthetic Dentistry, November 1953.

Some dental contributions to the knowledge of facial and cranial growth

by A. H. CRAVEN*, B.D.S., D.D.S., M.S.,
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Since one of the most indestructible portions of the human body is the dentition, it is not surprising to find the interests of physical anthropologists and dentists linked together. A great deal of the knowledge of man's past history has thus been based on the dentition. This relationship, dentist and anthropologist, has progressed from the initial piecing together of the fragments of protohuman skulls to the study of differential growth of the head of living racial groups.

Needless to say, the earliest attempts at measuring the cranium and face were made by anthropologists. During the 19th century the number of measurements applied to the human cranium and face reached phenomenal proportions. During this period, however, the measurement of the growing skull was a relatively neglected topic. Perhaps this was due to the fact that there were too few infant skulls in the museums and, one could not determine for how long the child had been ill before death, with consequent possible changes of skull growth. It was on such crude material that the first attempts at evaluating head growth took place.

Foremost among the more recent of the dental anthropologists was Milo Hellman, who stated once that his dental colleagues thought he was a good anthropologist and that his anthropologist friends thought he was a good dentist — a somewhat modest statement from so great an individual. Hellman, a product of Edward H. Angle's orthodontic training, quite early fell under the guiding influence of anthropologists such as Osburn,

Boas and Wissler and it was while associated with the American Museum of Natural History that he became interested in the problem of the growing skull.

One of the first difficulties to be overcome, was to determine in any given collection of skulls, some chronological order, i.e., probable age at the time of death. Hellman very astutely solved this whole problem by the establishment of "Stages of Dental Development". In all some seven stages were derived on the basis of dental eruption, sequence of eruption, and later, the degree of attrition. This marked a very important step forward, as it dispensed with the sidereal "birthday" and established in its place a biologic age.

Having solved the problem of the sequence in which to place the skulls, Hellman searched for a suitable series of skulls of one racial, and even one regional group to measure the growing face and dentition. A series of prehistoric American Indians, from Arizona, fulfilled all his requirements. The measurements taken were based on the previous knowledge supplied by anthropologists and consisted of measurements in height, width and depth of the skull.

Since we are most interested in depth as influencing the facial profile, it is of interest to note how these measurements were obtained. One of the classic methods of measuring skull height is by a device called a head spanner, which is a horse-shoe shaped rod with two horizontal posts fitting into the external auditory meatus and with a threaded screw at the top of the bow which is adjusted to make contact with the vertex of the skull. The distance between the tip of the

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screw and the horizontal rods is measured as skull height. Here, again, Hellman distinguished himself by swinging this headspanner from the measurement of vertical height of the skull to the measurement of a series of midline points on the external auditory meatus.

These measurements of the profile were then plotted out and by joining the points with straight lines, a graphic illustration, in the form of a polygon, showed the proportions of the face and its changes with age.

Perhaps here was the beginning of the *scientific* study of cranial growth as one is reminded of Lord Kelvin's famous words — "when you cannot measure it, when you cannot express it in numbers . . . you have scarcely, in your thoughts, advanced to the stage of Science, whatever the matter may be."

The next logical step was for Hellman to apply this method of measurement to the growing, healthy living human. This he did, substantiating his findings in the skull material. Later he turned his investigations toward the variation of the individual facial structures, and even today, some of his observations are being confirmed by newer methods. It is interesting to note that Krogman, considering this period, has aptly paraphrased thus—"The skull is dead, long live the head."

While Hellman had been busily accumulating all this information, a radiologist, A. J. Pacini, in 1922, developed a technique for taking accurate lateral radiograms of the skull and suggested its practical application to anthropology. But, this idea was to lay dormant for nine years.

In 1931, B. H. Broadbent, also a protégé of Angle's school, while studying at Western Reserve University in Cleveland, developed the idea put forward by Pacini. The craniostat, a device for holding and measuring skull material, was modified to be able to

hold the living head and accurately position both lateral and frontal X-ray film cassettes. This device, to which the patient was adjusted, produced standardized frontal and lateral radiograms with a known amount of distortion which could be calculated for; an essential factor, since X-radiation behaves exactly as light waves by diverging from the source. Indeed, the X-ray machines were fixed at a five foot distance from the head-holding device to minimize this divergence. This apparatus is called the Broadbent-Bolton cephalometer. The Bolton family provided generous financial aid in the development of this research tool and its continued use today as the Bolton Foundation.

This striking and progressive step allowed dentists to examine the living growing bony structures of the face and head and make comparison with the craniometric findings of Hellman and other anthropologists. The introduction of lateral radiograms of the head led to the discovery of some different points of measurement than had been possible by anthropometric means, for example, the outline of the sella turcica became clearly visible. In addition, the variable thickness of the soft tissues, a disadvantage to Hellman's living studies, was eliminated.

Using the Broadbent-Bolton cephalometer, Broadbent, through the Bolton Foundation, was able to examine at frequent intervals, (annually or semi-annually), a large group of Cleveland children. Literally thousands of these radiograms are now filed in Cleveland and they have provided Broadbent with material to compile the "normal" or "average" stages of growth at each chronological age level. In effect, the superpositioning of these serial films gives an almost moving picture of growth.

The works of Broadbent, although quite graphic, still would not fit into

Lord Kelvin's requirements of a Science; but, metric determination of the growth of the face and cranium was not far away. In 1941, A. G. Brodie, using some of Broadbent's material and some serial radiograms of his own measured the growth of the cranium and face both collectively and individually.

One of the first things Brodie had to do was to prove that the cephalometric readings, from the radiograms, were accurate. The method was checked by inserting lead points into a series of skulls, mounting the skulls in the cephalometer, measuring the resultant points on the radiogram, and, after correcting for distortion, comparing with the direct measurements on the skulls. The accuracy of mid line points by this method was within 0.5 mm. Needless to say mid-line points only were examined, since the factor of distortion, in lateral radiograms, would mean that the side of the head closer to the film would be less distorted than the side further away from the film.

By dividing the head into its component parts, viz., brain case, middle face, dental area and mandible, Brodie was able to measure the amounts of each region as well as the whole face. Here was an attempt at applying the works of D'Arcy Thompson, Huxley and others to the problem of relative growth in the human skull.

Brodie's next interest lay in the variation shown by individuals in their cranial growth. He came to the conclusion that early in life the typical pattern for the face was established and thereafter did not change radically. Recently, Brodie's work, covering the third month to the eighth year of life, has been extended in both directions; by a study from birth to three months of age (Ortiz and Brodie) and by the re-examination of the original groups which by now had reached the eighteenth year (Brodie).

In both studies the contention that the established typical pattern did not change greatly was borne out, although changes were noted in some individuals. The complex variability of the component parts of the face has been further studied and elaborated by Brodie's students, namely, Downs, Wylie and Coben.

The development of the Broadbent-Bolton cephalometer has led to other adaptations of the principles involved. Perhaps one of the most versatile and useful of these later modifications was that developed by Bjork, a dentist of Sweden. Bjork devised a head holder which was portable, (it fits into a suitcase). For the anthropologist this was a large factor to be considered, since the cephalometer and X-ray machine could now be carried to previously inaccessible people. Thus, the cycle was completed by the contribution of cephalometrics back to anthropology.

Bjork measured the bony facial and cranial structures in lateral radiograms by the construction of much the same facial polygon as had been used by Hellman many years previously, but the base of the cranium was used as a reference plane rather than the ear to nasal plane. Using these methods, Bjork first examined two age groups, Swedish male children and adult males, to determine the overall age changes and individual variation. He placed particular emphasis on the cranial base as influencing the facial profile.

Next, Bjork, carrying his portable cephalometer, went to South Africa where he X-rayed in lateral view, the heads of Bantu male children and adult males. The Bantu were chosen as being a primitive group. The findings from these two racial studies revealed surprisingly little difference between the facial profiles of the Swede and Bantu, and that a greater amount of variation occurred within

each race than between the races. This was further substantiated by the author's extension of this method to the Australian Aborigine.

For the first time in both the Bantu and Australian Aborigine, the growth of the living head could be examined. Perhaps the future may lead to the establishment of definite racial gradients of facial growth or at least definite typical patterns of growth.

Despite all that had been revealed by means of radiography, in both lateral and frontal radiograms, the actual sites at which growth was taking place in the growing skull were not definitely located. Schour and Massler and others had experimented with vital staining, (alizarine red S), to determine the sites of growth in the rat cranium and face; but, it remained for Moore, in 1949, to extend this vital injection technique to the nearest approach to human skull, the macacus rhesus. Moore embedded the alizarinated monkey skull in plastic and sectioned it in the sagittal plane by cutting away plastic and bony tissue with a face cutting lathe. As each new change in staining was revealed, a standardized coloured photograph was obtained. In this manner, the sites of stain, showing the sites of calcium deposition and presumably the sites of growth of the bony skeleton, were mapped out from an antero-posterior point of view, or depth of the face. During the last year the author repeated Moore's experiments to determine the sites of growth contributing to the width of the face in the macacus rhesus. Just how far these studies are directly applicable to the human is debatable, but gross primate characteristics must also hold true for man.

Thus the question "Where does growth take place?" has been partially answered, supplementing the overall measurements obtained from the radiograms; but, another question automatically arose — "How much

growth was contributed by each bone facing a site of growth?" It was here that the oral surgeons stepped in and, by inserting metal implants on each side of sutural margins in a young animal, they were able to determine the relative amounts contributed on each side of the suture. But, the technique has limitations to the easily accessible surface sutures, as has been shown by Sarnat and Gans in the macacus rhesus and Selman in the rabbit. In addition, the effects of scar tissue formation and the difficulties of reaching the deeper sites has still left further investigation. Perhaps the field of radioisotopes offers possibilities for the quantitative measurement of skull growth.

Of the four chief specialties of the human head, viz., neurology, ophthalmology, otolaryngology, and dentistry, perhaps the dentist has played quite a considerable role in coordinating them all in his study of the growing human head.

BIBLIOGRAPHY

1. Bjork, A. 1947—The Face in Profile. *Svensk Tandlakare Tidskrift* Vol. 40 No. 5B.
2. Bjork, A. 1950—Some Biological aspects of prognathism and occlusion of the teeth. *Acta. Odont. Scandinav.* 9: 1.
3. Bjork, A. 1951—The nature of facial prognathism and its relation to normal occlusion of the teeth. —*Amer. J. of Orthod.* 37: 106-124.
4. Broadbent, B. H. 1931—A new X-ray technique and its application to Orthodontia. *Angle Orthod.* 1:45-66.
5. Broadbent, B. H. 1937—The face of the normal child—*Angle Orthod.* 7: 183-208.
6. Brodie, A. G. 1941—On the growth pattern of the human head from the third month to the eighth year of life. *Amer. J. Anat.* 68: 209-262.
7. Brodie, A. G. 1953—Late Growth changes in the human face. *Angle Orthod.* 23: 3, 146-157.
8. Coben, E. S. 1952—The integration of certain variants of the facial skeleton. Master's Thesis. University of Illinois, Chicago, 1952.
9. Craven, A. H. 1952—A cephalometric investigation of Central Australian aborigines using a roentgenographic technique. Master's Thesis, University of Illinois, Chicago, 1952.
10. Craven, A. H. 1953—Unpublished material.
11. Downes, Wm. B. 1948—Variations in facial relationships. *Amer. J. Orthod.* 34: 812-840.
12. Downes, Wm. B. 1952—The role of cephalometrics in orthodontic case analyses and diagnosis. *Amer. J. Orthod.* 38: 162-182.

13. Gans, B. J. and Sarnat, B. G. 1951—Sutural facial growth of the macaca rhesus monkey. *Amer. J. Orthod.* 37: 827-841.
14. Hellman, Milo 1927—Changes in the human face brought about by development. *Int. J. Orthod.* 13 (6): 475-516.
15. Hellman, Milo 1929—The face and teeth of man. *J. Dent. Res.* 9 (2): 179-201.
16. Hellman, Milo 1931—Morphology of the face jaws and dentition in Class III malocclusion of the teeth. *J.A.D.A.* 18: 2150-2173.
17. Hellman, Milo 1941—Diagnosis in Orthodontic practice. *Amer. J. Orthod. and Oral Surg.* 27 (12): 681-704.
18. Huxley, J. S. 1932—Problems of Relative Growth—New York, Lincoln MacVeagh, The Dial Press.
19. Kelvin, Lord 1953—Quoted in *Science*, October 23rd, pg. 452.
20. Massler, M. & I. Schour 1944—Postnatal growth pattern of the facial skeleton as measured by vital injections of Alizarin red S. *J. Dent. Res.* 23: 217.
21. Moore, A. W. 1949—Head growth of the macaque monkey as revealed by vital staining embedding and undecalcified sectioning. *Amer. J. Orthod.* 37: 654-671.
22. Ortiz, M. H. & Brodie, A. G. 1949—On the growth of the human head from birth to the third month of life. *Anat. Rec.* 103: 311-334.
23. Pacini, A. J. 1922—Roentgen ray anthropometry of the skull. *Radiology* 3: 230-238, 322-331, 418-426.
24. Schour, I. { 1941—Vital staining of growing
Hoffman, M. { bones and teeth with
Sarnat, B. G. { alizarin red S. *J. Dent.*
Engel, M. B. { *Res.* 20: 411-418.
25. Selman, A. 1953—Unpublished data.
26. Thompson, D'Arcy W. 1952—On Growth and Form—2nd Edit. Cambridge University Press, Cambridge.
27. Wylie, W. L. 1949—An assessment of antero-posterior dysplasia. *Angle Orthod.* 17: 97-109.

National dental examining board of Canada

by H. N. BEACH, D.D.S.

At the first meeting of the Canadian Dental Association in Montreal in September 1902, one of the matters discussed was the possibility of the eventual establishment of a National Dental Examining Board. Fifty years later, in June 1952, the National Dental Examining Board of Canada was incorporated by Federal Statute.

In the short time available it is impossible for one to do justice to the efforts of the numbers of people who, through these years, have sacrificed time and energy and even their own points of view to bring to fruition their common belief in the sound wisdom of a single standard for Canadian dentistry.

This event has not been without notice in the national press. Favourable editorials have appeared in several leading Canadian newspapers voicing appreciation of the profession and expressing their trust and confidence in dentistry's desire to serve the Nation's best interests in the future.

The responsibility of doing the groundwork in connection with the

creation of a National Board was placed with the Council on Dental Education of the Canadian Dental Association through its terms of reference.

For some seven years prior to 1951 the Council attempted at their meetings to lay down some general principles in respect to this matter and as a result of their work the Board of Governors, at their annual meeting in May 1950, resolved that the various provincial bodies be invited to a meeting for organizational purposes. Accordingly, the provinces having responded agreeably, a meeting of the representatives of the Provincial Licensing Bodies of the Dental Profession in Canada was arranged at the Head Office of the Canadian Dental Association, 234 St. George Street, Toronto, on February 9, 1951, under the chairmanship of the then President of the Canadian Dental Association, Dr. R. P. Lowery. This meeting was characterized by a willingness to reach agreement and a high standard of thought with respect to the goals of Canadian dentistry. Reference was made to those who had laboured on our behalf and passed on, with a personal tribute to the late Dr. Ken

Carver; to the work of the Council on Dental Education through their surveys, etc., in improving the standard of training in the schools and setting up minimum requirements; and to the important point that the establishment of a National Dental Examining Board would stabilize the qualification for the practise of dentistry upon a National basis.

The meeting considered, and adopted as amended, the recommendations by the Council on Dental Education in regard to the establishment of a National Dental Examining Board embodying three general principles:

1. That the qualifying conditions shall be recognized as the highest in Canada;
2. That the rules and regulations governing the examinations shall be acceptable to the licensing bodies concerned;
3. That the examinations will be conducted in a manner fair and equable to all concerned.

The meeting unanimously carried a resolution "That the Executive of the Canadian Dental Association proceed with the . . . incorporation of the National Examining Board." Members were appointed to the Board by the various provincial licensing bodies and also two members from the Council on Dental Education.

The first meeting of the Board was held at the Canadian Dental Association Head Office in Toronto on June 29th and 30th, 1953, at which the By-Laws were adopted, Executive Officers elected and a Registrar-Secretary appointed.

No mention can be made of these events here recorded without referring to the Dental Council of Canada originally organized in Montreal in 1902. It served dentistry well for over half a century. In that time 1,930 certificates of qualification were issued by this Council.

Large sums of money were given to the Research Committee of the Canadian Dental Association and to the development of the National Dental Examining Board.

It was singularly coincident that the final meeting of this organization took place in Montreal during the Annual Convention of the Canadian Dental Association last October, just fifty-one years since its inception at the Canadian Dental Association meeting so many years before.

At this time the Council turned over the considerable remainder of their funds to the National Dental Examining Board. The gift was received by Dr. H. J. Merkeley, President of the National Dental Examining Board, and himself a former member of the Dental Council of Canada, who replied in a fitting manner to what was termed "this magnificent gesture of good will toward the whole profession." The members of the Council, Doctors Winn, Brett, Freeland, Peters, Crosby and McIntyre were then honoured by their assembled confreres.

Although continuous effort had been made by the Dental Council of Canada to achieve unanimity it was not possible to attain this end and so be incorporated on a National basis. The time had not yet come. It simply came under a new name.

The National Dental Examining Board issues a certificate to successful candidates which may be registered with any or all Canadian Provincial Licensing Boards for the purpose of securing a licence to practise in the respective province.

We must not fail to give the necessary leadership in meeting the dental needs of a nation. Under the law, dentistry has been given the privilege of regulating its own conduct in caring for the dental health of the people. If we as dentists fail to meet this responsibility it will likely be taken over by the

state and we would lose our freedom as a profession.

Last year Canada's population increased by 351,000 as of June 1st, 1953. In the year ending January 1953, over and above deaths and retirements, Canadian dentistry gained 39 new practitioners. If current rates of increase continue until 1961 on the basis of current volume of immigration and present natural increase we might expect a total population of 17,500,000 with a dental profession of 5,530 members.

The implications of such a situation need no elaboration to readers of a dental journal. Our danger is that the situation may go by default simply because we do not care enough.

We must use our best thinking, marshal the forces that we have and enlist auxiliaries to render the best health service that we are capable of and so aid in obtaining for our nation the highest possible level of health.

Plans which meet the need of the times will set a pattern for other nations.

A National Dental Examining Board will fit into such planning.

The National Dental Examining Board

President:

Dr. H. J. Merkeley, Manitoba.

Vice-President:

Dr. Wm. Miller, British Columbia.

Executive:

Dr. R. J. Godfrey, Ontario.

Dr. A. G. Racey, Quebec.

Dr. J. F. Edgecombe, New Brunswick.

Registrar-Secretary:

Dr. H. N. Beach.

Members:

Dr. Reginald Ball, Newfoundland

Dr. Heath McIntyre, Prince Edward Island.

Dr. Hugh Eaton, Nova Scotia.

Dr. W. F. Hancock, Saskatchewan.

Dr. H. R. MacLean, Alberta.

Members from Council on Dental Education:

Dr. R. G. Ellis.

Dr. J. A. Fortier.

NATIONAL DENTAL EXAMINING BOARD EXAMINATION SCHEDULE

MONDAY, June 14th

West of Brandon	9.00 a.m.	Operative
East of Brandon	10.00 a.m.	"
West of Brandon	1.30 p.m.	Oral Surgery, Anaesthesia & Pathology
East of Brandon	2.30 p.m.	" " "

TUESDAY, June 15th

West of Brandon	9.00 a.m.	Prosthodontics
East of Brandon	10.00 a.m.	"
West of Brandon	1.30 p.m.	Ethics, Jurisprudence & Practice Management
East of Brandon	2.30 p.m.	" " "

WEDNESDAY, June 16th

West of Brandon	9.00 a.m.	Preventive Dentistry
East of Brandon	10.00 a.m.	"
West of Brandon	1.30 p.m.	Oral Medicine
East of Brandon	2.30 p.m.	"

THURSDAY, June 17th

West of Brandon	9.00 a.m.	Two half-hour oral examinations with
East of Brandon	10.00 a.m.	" " " " " half-hour interval

Oral examination will be in the application of basic sciences to clinical dentistry.

Applicants accepted as candidates for examinations will be notified individually as to the place they shall report for examinations.

The National Dental Examining Board issues a certificate to successful candidates which may be registered with any or all Canadian Provincial Licensing Boards for the purpose of securing a license to practice in the respective province.

Application on the proper form must be submitted to The Secretary, National Dental Examining Board on or before April 15th, in order to be acceptable for the annual examination. Application forms may be secured at the office of your Faculty of Dentistry or by writing the Secretary. All correspondence relating to the N.D.E.B. should be addressed to:

Dr. H. N. Beach, Secretary,
150 Metcalfe Street, Ottawa, Canada.

ABSTRACTS

The Effect of Toothbrush Type on Gingival Health

by J. J. HINIKER, D.D.S., and B. K. FORSCHER, Ph.D.

The Journal of Periodontology, Vol. 25, No. 1, January 1954.

The importance of the toothbrush, correctly and frequently used, as a therapeutic agent in the control of periodontal disease has been emphasized by many workers. However, the question remains as to the most desirable type of brush in regard to bristle hardness, design and bristle material.

Five types of brushes were studied,

all supplied by a single manufacturer. These brushes were:

1. Soft Natural Bristle 3 Row (18 knot)
2. Hard Nylon 3 Row (18 knot)
3. Hard Natural Bristle 3 Row (18 knot)
4. Soft Nylon Multi-Tufted (55 knot)
5. Soft Natural Bristle (55 knot).

Results were recorded by PMA scoring for 36 anterior units and by color photography at time 0, 3 weeks and 12 weeks.

The results for the various brushes were very similar. However, Brush 4, Soft Nylon Multi-Tufted, appeared slightly superior with Brush 1, Soft Natural Bristle 3 Row, a close second.

A method for closure of oroantral openings.

by DE ORR COOLEY, D.D.S., M.S., San Jose, Calif.

Journal of Oral Surgery, Vol. 12, No. 1, January 1954.

The following procedure may be used to advantage for closing small defects.

Two parallel incisions are made adjacent to the opposing surfaces of the two teeth bordering the edentulous area which contains the oroantral opening. These incisions are continued palatally and are terminated on the palate about 6 to 8 mm. from the crest of the edentulous ridge. The terminal ends of these incisions are then joined by a horizontal incision. The horizon-

tal incision and those parts of the parallel incisions made on the palate are not carried through the entire thickness of the soft tissues but are extended to a depth of about 3 mm. The buccal extensions of the parallel incisions are then continued upward along the buccal surface of the ridge as two 70 degree angle diverging incisions. These incisions are extended on either side for about 8 mm. and are then terminated as two short vertical incisions. These terminal incisions are extended to about the point of reflection of the mucosa from the buccal surface of the gingiva. Beginning along the horizontal incised margin, a palatal flap about 3 mm. thick is raised from the underlying soft structures. This flap is formed by sharp

dissection until the mucoperiosteum of the palatal side of the ridge is reached at which point the full thickness of the mucoperiosteum here and that overlying the ridge are included in the flap. Continuing upward on the buccal surface of the ridge, the remainder of the outlined flap is elevated from the underlying bony surface. The entire flap is then repositioned buccally (usually about 5 mm.) until the orifice of the oroantral opening lies over solid bone and away from the bony antral opening with which it formerly communicated. Sutures then are placed along the terminal extensions of the

buccal incisions and adjacent to the buccal and lingual surfaces of the involved teeth. The margins of the orifice are then freshened and approximated with fine sutures on an atraumatic needle.

The repositioned flap and adjacent teeth then are thoroughly dried and a paste of zinc oxide and eugenol is applied so that it covers the flap and opposing surfaces of the teeth. This will splint the flap and protect it from food and mouth fluids. This dressing should not be disturbed for at least five days.

What about research?

by SAMUEL R. DETWILER, Ph.D.

The New York State Dental Journal, Vol. 19, No. 6, June-July 1953.

Research, if it is to amount to anything, may be regarded as serious business; to be approached and pursued with high ethical standards, with absolute intellectual integrity, and a keen sense of moral obligation to those whose financial contributions make the research possible.

The prosecution of research implies far more than the purchase of expensive equipment, the hiring of technicians, the maintenance of animals, and the creation of a pseudo-atmosphere of investigation. It requires imagination, emotional drive, critical judgment and, above all, hard work.

Why do we do research? A really sincere investigator does it because of an innate intellectual curiosity.

Not everyone is equipped to do effective research, no matter how strong the urge may be. It requires a certain combination of qualities, regardless of a possible sincere idealism. Some may have the intellectual equipment and technical skill but lack the drive so essential to a successful career

in research. It must not only dominate his thoughts, but must consume practically all of his available time if he is to realize his goal.

There is a definite technique that must be followed in doing research. Experiments should be soundly planned in relation to some very definite problem. To do effective research, proper background must be developed, and many hurdles must be cleared between the time a series of experiments is planned and the results are wrapped up in the form of a manuscript deserving publication in a reputable and responsible scientific journal. Sound critical judgment in the evaluation of data is essential. Data frequently require statistical analysis in order to determine whether they have any real significance. Results that are obtained from experimental procedures should stand the test of confirmation.

Another aspect of research pertains to the matter of controls. The literature is clogged with results which are invalid because of the lack of properly controlled experiments.

It is important in carrying out a sustained series of experiments toward the solution of a specific problem to be constantly on the alert for so-called by-

products. They often yield gratifying and significant dividends.

In relatively recent years we have seen a great deal going on in the way of mergers. Although these have been and are chiefly in the business and financial world, we nevertheless find them taking place to a considerable extent in the field of science. The advantages to be gained from large cooperative efforts are obvious, but there is still some reservation as to how far we go in *pure science* to stimulate men of diverse interests to put their eggs in the same basket. One thing which characterizes the scientific worker is his individualism. He wants to be let alone to do the things which interest him. One sees more and more the destruction of departmentalization in science other than for the purpose of administration, and this seems to have come about through a gradual evolutionary process. It is expected and desirable that cooperative studies should spring up between the biologist and the physicist, for example, or the biologist and the chemist.

A growing tendency to subjugate the worker for the project has been noted. Certain projected programs of scientific research in which the physiologist, the chemist, the physicist, the anatomist and others tended to be looked upon as tools to be used without definite assurance as to their fundamental interest in the project. The reason for this is apparent. The public is much more likely to contribute to a study of cancer,

headache, infantile paralysis, dental caries, and a score of other human diseases than to an investigation by an individual scientist doing work which is very valuable but unknown to the public. Difficulties are apt to arise after the money has been obtained, because the accomplishment of a project may call for a somewhat forced cooperation on the part of scientists into whose hands the money is entrusted.

We see the trend towards the development of centres of activities in the form of institutes, central research laboratories and the like. The advantages to be gained from this sort of cooperative development are many, yet those in charge must bear in mind the success of any such enterprise must depend largely upon the extent to which men can enjoy autonomous activity. In any scheme for the promotion of scientific research, the individuals concerned should be given all possible free rein and all possible financial support necessary for proper functioning. The encroachment of administrative duties upon the scientist's time should be guarded against in any scientific undertaking of magnitude.

We are entering upon an era which is going to be characterized by the development of numerous large scientific foci which will call for stupendous scientific cooperation. However, any administrative policy or ideology which tends, in any way, to subjugate the individual for the project is contrary to progress.

Occlusal Harmony—A Consideration in Periodontal Treatment.

by JOHN E. RHOADS, B.S., D.D.S., F.A.C.D., San Francisco.

The Journal of the California State Dental Association and the Nevada State Dental Society. Vol. 29. No. 6. November-December 1953.

The teeth are recognized to be instruments for cutting and comminution

of food during the process of mastication, and since they should be kept normal and sound and firmly attached in the jaws for a lifetime, it is necessary that the investing tissues be kept intact also. Their anatomy is such that they are enabled to perform two major functions during life: (1) to incise and reduce food material during mastication, and (2) to help sustain themselves in the dental arches

by assisting in the development and protection of the tissues that support them. Protection of the investing tissues and stabilization of alignment are provided by the normal form of the individual teeth, their proper alignment with other teeth in the same jaw, by normal development of the jaws, and by the proper relation of one jaw to the other during functional movements.

If the teeth individually or collectively are out of alignment, or if steep cusps, ridges, or eminences prevent free movement of the jaws during excursions from or to centric position, then a disharmonious relationship is present which will in time result in disaster.

Histologic studies have shown the result of misdirected stress on the periodontal membrane, the alveolar process, and the position of the tooth. There is a destruction of bone of the alveolus in the direction of pressure and a building of bone in the direction of pull or tension.

In cases of locked occlusion where steep cusps prevent the migration of a tooth or teeth, the periodontal membrane is kept in a state of irritation by being alternately compressed and extended, depending upon the direction of the masticatory stroke. This constant irritation results in an inflammation and widening of the space between tooth and alveolus—the end result being inflammation of the marginal gingivae, loss of alveolar bone, and pocket formation.

As a result of refined foodstuffs, the teeth of many individuals now do not achieve the relief from interlocking cusps and traumatic occlusion necessary for their prolonged health and the well-being of the surrounding tissues, and it is necessary, therefore, for the dentist to accomplish this reduction and balancing of the occlusion.

Corrective grinding to eliminate faulty centric occlusion, interlocking cusps, and traumatic occlusion is accomplished to best advantage in patients of late adolescence and early adulthood before the ravages of periodontal breakdown from malocclusion have left their mark upon the supporting bone of the dental arches.

Equally as important is attention to correct cuspal harmony in cases requiring treatment for existing periodontal disturbances.

Increasing emphasis is being placed upon the necessity of producing complete occlusal harmony in the dentition rather than merely reducing cuspal interference, for unless occlusal stress is evenly distributed excessive horizontal stress will still be present.

It is not possible to affect the halt of advancing periodontal disease by occlusal correction alone, but in the light of investigations which have been made and are now being made it is becoming increasingly evident that the attainment of complete occlusal harmony is a very necessary factor in the plan and execution of treatment if permanent lasting results in the treatment of periodontal disease are to be effected.

Exercise of conscience has been described as a mystical experience. For the dentist it denotes a feeling of professional responsibility which should be a part of all of us, an integrity of character dignifying our every decision, our every act. Though this inner sincerity is an imponderable that can only be *valued* it is nonetheless the essence of ethical conduct. The professional man's behaviour then, is a reflection of his innate character. As Schopenhauer noted in his "Ethical Reflections," "the question of whether external force hinders the aims is secondary." We are expected to subordinate many inner ambitions to the spirit of professional conduct.

RESEARCH

FOREFRONT OF CANADIAN DENTISTRY

*The effect of Propyl Thiouracil on the Development of Molar Teeth of Rats.**

by K. J. PAYNTER, (Division of Dental Research, University of Toronto, Toronto).

It has been shown that thiouracil and related compounds inhibit formation of thyroid hormone, producing much the same effect as surgical thyroidectomy but without the parathyroid disturbances often associated with surgery. It has also been shown that in the rat 6-n-propyl-2-thiouracil is approximately eleven times more potent than is thiouracil. Administration of propyl thiouracil is thus a good means of studying the effects of thyroid hormone deficiency on the development of such structures as teeth or bone in which calcification plays such a prominent role.

Glickman and Pruzansky in 1947 reported in abstract that hypothyroidism induced by propyl thiouracil in albino rats resulted in retarded eruption of all teeth, as well as a reduction of both endosteal and periosteal bone formation throughout the jaw.

In the following experiment, seven litters of rats of the long-Evans strain were reduced in number to six animals per litter. Each litter was divided into two groups of three animals, one of which served as an experimental group, the other as a control.

Beginning the day after birth each experimental animal received daily a subcutaneous injection of a 0.1% solution of 6-n-propyl-2-thiouracil in 0.9% saline. Control animals were given equivalent injections of 0.9% saline.

Daily weight records were kept of the animals. The mean weight of each litter group was recorded.

The rats were sacrificed in pairs, an experimental animal with its litter-mate control at ages five, ten, fifteen, twenty, and twenty-five days.

The pituitary and thyroid glands of the animals were removed, prepared for section, and stained—the pituitaries in aldehyde fuchsin with light green, and the thyroids in hematoxylin and erythrosin.

The head of each animal was divided sagittally and one-half was fixed in Bouin's solution, decalcified, embedded in paraffin, and sectioned sagittally. The maxilla of the other half was prepared the same way for frontal sections. The mandible of this half was dissected free of soft tissue for grenz ray study.

The heads were sectioned serially at ten microns and stained with hematoxylin and erythrosin.

The following observations were noted: (General)

Each of the animals that had received propyl thiouracil exhibited the characteristic retardation in growth associated with hypothyroidism.

The thyroid gland of each of the drug-treated rats appeared markedly hyperemic and hyperplastic with little

*Source—In Press—Jour. Dent. Res.

colloid present in the follicles. Delta cell vacuolation was demonstrated in the pituitary gland of the same animals.

In those animals that received the thiouracil and which were not sacrificed before the age of fifteen days, a retardation in eruption of the lower incisor teeth of from one to three days was observed.

(GRENZ RAY) As early as five days the amount of calcified tooth structure appeared to be less than normal in the propyl thiouracil-treated rats. This difference was more noticeable in older specimens.

After ten days the mandibular cancellous bone in the experimental rats appeared denser than did the bone in the controls.

Retardation in eruption of the molar teeth of the drug-treated rats was apparent in the grenz ray at fifteen days. This too was more noticeable at later ages.

By fifteen days it was apparent that the odontogenic end of the incisor tooth was more distal in relation to the molars in the control mandibles than in the experimentals. This too was more apparent at later ages.

(HISTOLOGICAL). Histologically it appeared that in the propyl thiouracil-treated rats there had been a gradual slowing down of all of the processes involved in the formation of their teeth. Histo-differentiation, proliferation, deposition, and calcification each occurred, and in the same order as in the controls, but at a slower rate, com-

patible with the general retardation in metabolism associated with hypothyroidism. The drug administration did not appear to have changed the individual tissues of the teeth in any way that could be detected histologically. Differences were quantitative rather than qualitative.

The organization of the periodontal membrane from the loose irregular fibres of the dental sac to the directionally organized fibres of the membrane was delayed in the hypothyroid animals. This organization normally occurs after root development and eruption have sufficiently advanced. Both of these (root development and eruption) were delayed in the drug-treated rats.

The increase in density of the cancellous bone seen in the grenz ray of the mandible of the hypothyroid rats was also apparent histologically. The bone trabeculae appeared considerably thicker in the jaws of these animals with a concomitant reduction in marrow space.

Delay in eruption of the molar teeth of the experimental animals was also apparent histologically by the age of twenty days.

SUMMARY: Thyroid hormone deficiency induced by propyl thiouracil resulted in: (a) Retardation in all phases of tooth development including eruption. (b) No qualitative changes in any of the tooth tissues. (c) Considerable increase in thickness of bone trabeculae in the mandible. (d) Change in the incisor-molar tooth relationship.

This world should be a beautiful place for a child to live in. If he is handicapped by a facial deformity that is marring his happiness, we should try to move heaven and earth to restore that happiness to him, if at all possible. To hide behind the word "type" because it is the easiest way out, or assume that because a face pattern has serious abnormal deviations there is no use trying to help the patient, is not the courageous attitude to take.

Dental Public Health— a Vital Link in our Chain of Service

Public Health has been defined as "the art and science of preventing disease, prolonging life, and promoting physical and mental efficiency through an organized community effort". Dental Public Health activities take their important place in this general field of Public Health.

In 1902 the Canadian Oral Prophylactic Association was formed, and its general tenets were Public Dental Health education through encouragement of dentists to inform their patients of accepted preventive measures and the encouragement of dentists to engage in scientific research. Since that time many members of the dental profession have striven conscientiously to discharge their obligations as teachers of Dental Health.

In 1945 a special committee of the Canadian Dental Association formulated terms of reference in respect to the activities of a Dental Public Health Committee. The seven-point program considered desirable for volunteer dental groups to undertake was enunciated as follows:

1. Education of the dentist in accepted Dental Health teaching.
2. Education of other health workers, such as nurses, teachers, and students in other health professions with respect to Dental Health.
3. Education of lay groups such as Home and School and adult educational groups, Y.M.C.A., Y.W.C.A., Red Cross groups, Boy Scouts, Girl Guides, and other similar groups.
4. Preparation of suitable lecture material supplemented by slides and films, to assist dentists in Dental Public Health presentations.
5. Liaison with dental boards of the provinces in respect to supplying educational facilities to meet a local dental group need. e.g. Professional instruction to a dental group preparing them to meet a public demand for service which has been stimulated by Public Dental Health education.
6. Preparation of Dental Health pamphlets, charts, etc., for purposes of Dental Health education of the public.
7. Organization, planning and completion of surveys to establish reliable information, on dental service needs whenever desired by the Public Relations Committee.

Such a comprehensive project is not achieved without a great deal of effort on the part of those undertaking the responsibilities. The Canadian dental profession is fortunate in having many members who are willing to spend untold hours at this vital task.

However necessary and desirable this type of activity may be, its ultimate success will be dependent upon the degree of cooperation assumed by each practitioner. This can only be rendered by providing a health service to the

younger members of our population and by participation in organized Dental Health educational programs.

It would be naive, indeed, to suggest that each practitioner is performing his full share in this endeavour. The increasing incidence of dental ill-health in most areas, and the preponderance of time directed to the restoration of lost dental structures should indicate a need for a growing awareness of preventive measures. Fluoridation of communal water supplies, dietary control, thorough and timely oral hygiene procedures, and early and regular dental care are proven methods for the reduction of most dental disorders. It is the responsibility of each dentist to enunciate and explain their values to those with whom he comes in contact in his professional capacity.

It is unquestionably true that no one is checking the mouths of adults to determine whether or not satisfactory dentures have been constructed or marginless inlays have been inserted, as desirable and necessary as those restorations are, but every day some Public Health worker—dentist, physician, nurse—is looking into the mouths of children. As a profession, are we satisfied with what they find? Even meagre knowledge of statistics emanating from the many examinations made should elicit a negative response.

The dental profession must realize that it is dealing with a major Public Health problem—one that will require all the resources at its disposal in attempting to arrive at a satisfactory solution. Dentistry can no longer be satisfied with a service which allows for loss of teeth and function requiring extensive and expensive restorative measures.

The trust that is held by dentistry is the Dental Health of the people it serves. The profession must provide dental care which is preventive and positive in nature.

Book Reviews

Pathology for Students of Dentistry: By George L. Montgomery.

This book was reviewed in the January issue by Dr. Harry Hunter. We regret that the information did not include the name of the Canadian distributor, which is The Macmillan Company of Canada Ltd., and the price of this text is \$6.35. W.J.D.

Year Book of Dentistry (1953-1954 Series).

Edited by Stanley D. Tylman, and others.
Published by The Year Book Publishers Inc., 200 E. Illinois St., Chicago 11, Ill., U.S.A. Pages: 493. Price: \$6.00.

Once again the excellent publication 'Year Book of Dentistry. 1953-1954 Series' has arrived with its great wealth of scientific information.

The editors of the book — Stanley D. Tylman, Prosthetic Dentistry; Donald A. Keys,

Operative Dentistry; John W. Knutson, Public Health; Harold J. Noyes, Orthodontics; Hamilton B. G. Robinson, Oral Pathology and Oral Medicine; and Carl W. Waldron, Oral Surgery—have all been particularly selective in the sources of the articles.

Almost without exception the information supplied has practical application to the general practice of dentistry.

One of the most interesting sections occurs in that portion of the text which concerns itself with the fluoridation of communal water supplies. Here in a few brief pages are presented the salient factors attesting to the value and safety of such a procedure.

Another section deals extensively with caries—enunciating research in respect to aetiology and possible prevention or control.

The publishers, by making available such a wide diversification of information under one cover, perform an outstanding service for our profession. The acquisition of a generalized knowledge of the scientific material in this

book would certainly indicate a well-informed practitioner. W.J.D.

"The Dynamics of Psychosomatic Dentistry". By Joseph S. Landa. Published by Dental Items of Interest Publishing Co. Inc., Brooklyn, N.Y. Pages: 435. Price: \$8.75.

This book includes six chapters by authors having particular knowledge of psychology and psychiatry.

It deals with many problems of diagnosis which would be much easier if we possessed some knowledge of psychopathology. This vital problem is covered in all branches of dentistry in patients from birth to old age.

A careful study of its contents would certainly keep the recent graduate from falling into many pitfalls, and would explain to the graduate with years of experience why a classmate who had no more skill was a much more successful dentist.

This is a book which every student and dentist should read. W. J. Ross.

Clinical Dental Prosthetics: By Professor H. R. B. Fenn, F.D.S. R.C.S., D.D.S., Professor of Dental Prosthetics, University of London and Director of Dental Prosthetics, Guy's Hospital Dental School. Associated with Dr. Fenn are K. P. Liddelw, F.D.S. R.C.S., and A. P. Gimson, L.D.S. R.C.S.

The book contains 502 pages including an index and bibliography and is profusely illustrated with 350 half-tone plates and line drawings on good paper. Published by

Staples Press, London and Staples Press Incorporated, New York. Price \$10.00.

As the publishers indicate, the book has been written to fill a gap which has long existed in dental literature, namely, that there is no single textbook which deals fully with the clinical aspect of both full and partial denture prosthesis.

It has been written by three experienced teachers and is intended primarily for dental students, but the wealth of information which is contained makes it a valuable post-graduate text for the general practitioner as well as a useful reference book.

The purely mechanical side of denture construction is not included and emphasis has been placed on the clinical knowledge and skill required in this type of dental service as well as the principles of both full and partial denture construction.

Among the topics discussed in the book are applied anatomy, examination of the mouth and history taking, simple surgical preparation of the mouth, impression taking, recording jaw positions, anatomical articulation, difficulties encountered in denture prosthesis and their remedies, retention of dentures, design and immediate denture prosthesis.

In reviewing the contents of this book one is impressed with the simplicity of the text and yet the wide scope of the subjects covered. The book is well planned and produced and should constitute an important asset to the libraries of both the general practitioner and the students of dentistry. R. J. Godfrey.

The Association

Survey on Dental Economics

Preparation is under way to conduct a survey on dental economics in order to establish factual data relating to Canadian dentistry. Up to the present time reliable data related to the actual practice of Canadian dentistry has not been available. Survey questionnaires were mailed out to every Canadian dentist on or about February 15. The tabulated information taken from these completed

forms, when returned, will provide the basic information for many of the future activities of this Association.

Policy re Fluoridation of Communal Water Supplies

Since the adoption of the resolution approving the fluoridation of water supplies at the Annual Meeting last October, some confusion has existed as to what part the Canadian Dental Association should attempt to take in this movement.

At a recent meeting of the Research Committee it was felt that some policy should be established in dealing with these inquiries in order to avoid confusion. Request was made for a meeting of representatives from the Committees most concerned in the subject.

Under the Chairmanship of the President-elect, Dr. P. G. Anderson, a joint meeting was held of representatives from the Research Committee, Public Relations Committee and Dental Public Health Committee on December 23 last. After a full discussion of the subject, the following two resolutions were adopted.

1. THAT the policy of the Canadian Dental Association on the subject of fluoridation of communal water supplies is to study all scientific reports and make available factual information at all times. This Association strongly recommends the fluoridation of water supplies, but does not undertake to induce individual communities to adopt the procedure.
2. THAT all inquiries regarding fluoridation be answered by the Secretary on the basis of established policy with the advice of the appropriate Committee when necessary.

These resolutions were immediately submitted to the Executive for approval. The Executive gave unanimous approval, and consequently the resolutions represent the policy of this Association in dealing with this subject.

Advertising of Dental Remedies

Considerable comment has occurred during recent months respecting the claims appearing in large advertisements for dental remedies. Communications have been received suggesting that specific action should be taken in curbing some of the statements made in these advertisements. The Research Committee has for several years acted in co-operation with the Food and Drug Division of the Department of National Health and Welfare of the Federal Government in respect to this matter. The following statement made by the Food and Drug Division, recently received, sets forth the position:

"Except for our review of these advertisements prior to publication, which could not be accomplished without the manufacturers' cooperation in submitting their material for our consideration, dentifrice advertising would be of an even more objectionable character."

The Research Committee has agreed that members should continue to report cases of objectionable advertising and the Committee will in turn take the

points up with the Food and Drug Division.

Available C.D.A. Publications

Dental Public Health

Healthful Living—a popular leaflet containing answers to practically all questions usually asked respecting the teeth of children. Written in language suitable for either parents or children.

Price: Single copies free, in quantities .01 cent each.

Dental Health Guide for Teachers and Parents—an extremely useful and informative leaflet which contains instructions on dental care in simple language.

Price: Single copies free, in quantities .01 cent each.

How To Brush Your Teeth—a brochure illustrating by photographs and line drawings the proper method of brushing teeth with descriptive text. This publication has been carefully prepared; serves a purpose not easily achieved otherwise in attempting to educate patients.

Price: Single copies free, in quantities 1 cent each.

Your Child and Mine (40 pages)—a letter size booklet containing an abundance of illustrated information respecting dental health for children. An excellent informative publication which should be in every dentist's waiting room and in the hands of every teacher.

Price: \$1.00 per copy.

Miscellaneous

Careers in Canadian Dentistry—a film strip with a teaching manual. Copy is available on loan from the Secretary of any Provincial Board or may be obtained by writing C.D.A. Headquarters. Copies may be purchased from Associated Screen News, 108 Peter Street, Toronto, Ont., at \$2.50 per copy. This film strip and manual is intended for use in giving vocational guidance talks to secondary school students but may be used for other purposes.

Dentistry as a Career (32 pages)—a pamphlet containing information respecting the profession of dentistry, particularly for secondary school students.

Price: Single copies free, in quantities .08 cent each.

Facts on Fluoridation (48 pages)—a carefully prepared publication, giving scientific data on the fluoridation of communal water supplies. The subject matter has been prepared in an effort to

supply a source of factual information on this subject. It is intended to make revision from time to time when more scientific data becomes available.

Price: Single copies free; quotations given for quantities.

Facts—a question and answer leaflet on the subject of fluoridation of communal water supplies which will be published February 1954.

**Dental Hygienists—Ancillary Personnel in the Dental Profession*—a leaflet outlining facts related to dental hygienists.

Price: Free to members.

**A Guide to Professional Conduct*—an attractive booklet setting forth the guiding principles for ethical conduct in the practice of dentistry.

Price: Single copies free, quotation given on quantities.

**A Charter for Dental Health*—a booklet setting forth the plan of the Canadian Dental Association in approaching the dental health problem.

Price: Single copies free, quotation given on quantities.

**Statement of Dental Health Policy*—an eight point statement representing the position of the Canadian Dental Association respecting the dental health of the nation.

Price: Free on request.

**Prevention in a Dental Health Program*—a leaflet giving the preventive approach to the dental health problem.

Price: Single copy free, quotation given on quantities.

Industrial Dental Services (40 pages)—a booklet giving a brief history of industrial dentistry, stating the policy of the Canadian Dental Association on the sub-

ject, and setting forth plans and recommendations for such services.

Price: Single copies free on request.

Pre-professional Education in Dentistry (69 pages)—a study of pre-professional education prepared by the late Dr. Thomas Cowling, Assistant Dean, Faculty of Dentistry, University of Toronto, for the C.D.A. Council on Dental Education.

Price: Free on request.

Catalogue of Library—a list of books obtainable from the C.D.A. Library together with supplemental list to date.

Price: Free on request.

* Published in both French and English, others in English only.

These publications may be obtained by sending request to: The Canadian Dental Association, 234 St. George Street, Toronto, Ontario.

News Items

President A. J. Coughlan made official visitations to dental societies in Western Canada from February 18 to March 12 at the following centres: Fort William, Port Arthur, Saskatoon, Edmonton, Calgary, Lethbridge, Nelson, Victoria, Vancouver, Regina and Winnipeg.

The next meeting of the Council on Dental Education will be held on June 14-15, 1954.

June 8 to 13 are the dates for the Annual Meeting this year of the Federation Dentaire Internationale at Schwingen, The Hague, Holland.

After 75 years, Dental Items of Interest published by The Novocol Chemical Co. has suspended publication with the December, 1953, issue.

The Library

A.D.A. COUNCIL ON DENTAL THERAPEUTICS. Accepted Dental Remedies. 1954. 207 p.

CHRSTIAN, H.A. The principles and practice of medicine. Originally written by William Osler. 16th ed. 1947. 1539 p. illus.

HEMLEY, S. Orthodontic Theory and Practice. 2nd rev. and enl. ed. 1953. 591 p. illus.

JAMES, J. Dental Local Anaesthesia. 1929. 126 p. illus.

KLATSKY, M. and FISHER, R. L. The human masticatory apparatus. An in-

troducton to dental anthropology. 1953. 246 p. illus.

MACDONALD, J. B. The motile non-sporulating anaerobic rods of the oral cavity. 1953. 95 p.

MERCK & Co. Inc. The Merck Index of chemicals and drugs. An encyclopedia for chemist, pharmacist, physician, and allied professions. 1952. 1167 p. illus.

PRINZ, H. Diseases of the soft structures of the teeth and their treatment. 2nd ed. rev. 1937. 500 p. illus.

PRINZ, H. and GRENBAUM, S. S. Diseases of the mouth and their treatment. 1939. 670 p. illus.

SCHWARTZ, J. R. Inlays and Abutments. 1953. 478 p. illus.

Economic Security

"Economic Needs" Versus "Policies"

by E. L. R. WILLIAMSON, M.B.E., B.P.A., F.R.E.S.

Consulting Economist, and Administrator
of the C.D.A. Plan.

At a regional Dental Convention some time ago, one of the Members observed, "I have spent an enormous sum over the period of my life on insurance, and now am receiving a pittance which is not even a return of my money without interest."

Many similar cases have come to our attention. It is the purpose of this series to explain to the Membership why such situations arise, and to help them to avoid such experiences.

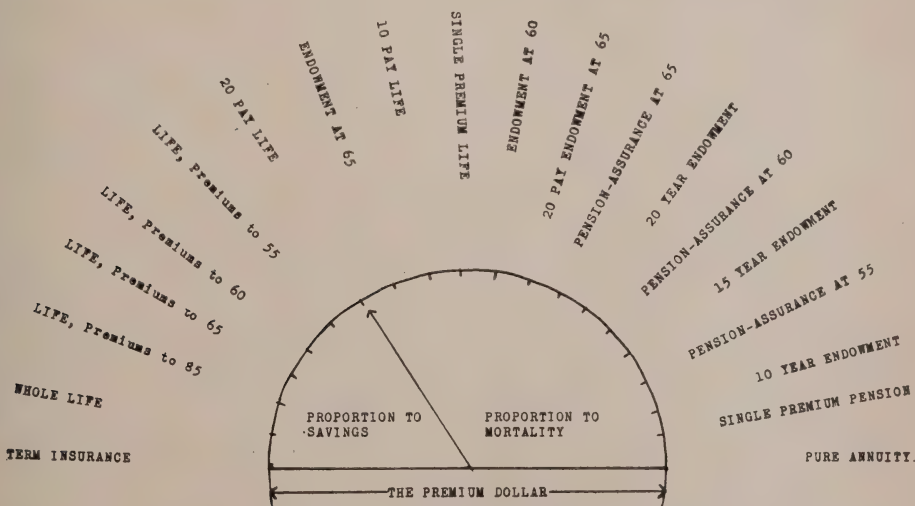
So far we have dealt with the basic elements of insurance in general: Mortality, Savings and Interest, Cost of Operation; and in particular with the important effect of Cost of Operation on Premium Rates. We now

come to consider the effect of variations in the proportions of "Mortality" and "Savings" in the premium rate, after allowance has been made for Cost of Operation.

The premium for "Term Insurance" consists entirely of "mortality" plus "cost", without any provision for "savings." Hence, Term Insurance has *no* "Cash Surrender" or "Paid-up" values, because there are no savings to provide such.

At the other end of the scale we find "Retirement Annuities", in which the benefit in event of decease prior to retirement age is limited to return of premiums with or without interest. This form is based upon "savings" less "cost", with *no* provision for "mortality."

Ranged between these two extremes is a vast series of contracts—usually more than sixty types with each average company—in which the basic difference is a slight change in the balance between the elements of mortality and savings. This may be illustrated by the following diagram:



The division of the semi-circle merely illustrates the shift in the proportions of the premium dollar devoted to "Mortality" and to "Savings" - actual proportions vary, of course, with each age of entry.

From this it will be clear why, say, "Life Paid-up at 65" gives more protection throughout life and less cash value at 65, than an "Endowment at 65."

Each type of contract represents a very intricate mathematical calculation designed to produce certain results in certain circumstances which the Actuary has strictly defined. When the contract is diverted to some other purpose, the result always is inefficiency, often substantial loss and hardship. The following examples will illustrate:

1. A Toronto dentist who has held \$73,000.00 of Term Insurance throughout his career, now at retirement age with the contracts expiring, still needing some protection in the event of decease, and without assured retirement income.
2. A Montreal dentist holding \$100,000.00 of 20 Pay Life which, the family protection needs being past, will serve only to increase Succession Duties on his estate if retained, yet will involve loss on the investment if cash surrendered.
3. An Ottawa dentist who held \$45,000 of Whole Life during the period of need for protection and, now, to produce retirement income, is surrendering for a loss on the original investment without interest.
4. A British Columbia dentist, deceased at an early age, left \$25,000 in Endowments which are producing only

\$132.00 monthly for the family, with nothing for the widow after the children are grown.

Each of these dentists, and hundreds more of whom these are typical had made an expenditure more than sufficient to provide him with a system of security which, in the several circumstances, would have met the needs and been a source of confidence and security. Each hoped, or believed, his contracts would produce that result; the failure arose from the fact that each was sold "policies" rather than a "*meeting of economic needs.*"

The "economic needs" of an individual, particularly a professional man, are a complex of many factors in which varying weight and relative proportions must be given between "mortality" and "savings" at various periods of life. No one type of contract alone can meet such needs; a complex of various elements must be integrated to produce an individualized, yet efficient system of economic security.

Insurance purchased without careful thought as to objectives, and then equally careful construction of an individual plan, may prove a frail reed in the storm. This is the cause of complaints against insurance, most decidedly not an inherent weakness in the principle of insurance.

Committees and Councils

Research

The Research Committee has two primary objectives — the stimulation and promotion of dental research in Canada, and the provision of factual data on scientific problems of importance to the dental profession. These objectives are reflected in the activity of the committee over the past year.

It has been the policy of the C.D.A.

to provide assistance in the form of Studentships for graduate training of dentists planning on a research career. During the past few years 12 persons have been so assisted. Eight of these are presently members of the staff in Canadian dental faculties, two are still engaged in graduate training programmes, and only two have accepted positions elsewhere than in Canada.

Assistance has also been made available upon occasion to Canadian research personnel to visit other labora-

tories or scientific meetings to confer on problems of mutual interest.

The Committee has noted the gratifying increase in dental research in Canada in the past few years and is confident that the Studentship plan has contributed greatly to this development.

While the accomplishment to date has been gratifying we must recognize that it is still far from adequate. The cost of dental treatment to the Canadian public in 1952 was \$48,400,000 or 1/6 of the total bill for all other medical treatment including hospitalization, and at that reached only about 1/3 of the public adequately.

We are making little headway in reducing the incidence of dental caries by reduction in carbohydrates. Our most helpful achievement is fluoridation. In the field of periodontics our understanding is still far from complete and prevention is hardly discussed. Likewise we have barely scratched the surface in our knowledge of the cause and prevention of malocclusion. These three — dental caries, periodontal disease and malocclusion are dentistry's major public health problems. Their solution depends on research.

The National Research Council in 1952-3 made grants for medical research totalling \$564,018; the grants for dental research were \$25,410. There is more money available at National Research Council to support projects in dentistry but we have inadequate numbers of trained personnel and inadequate facilities for major projects.

The Committee is now discussing plans to examine the status of dental research throughout Canada with the intention of determining what may be required to further expand this country's research achievement.

By way of providing the profession with factual data on current problems the Research Committee as one of its main projects during the past year published a brochure entitled "Facts on Fluoridation", copies of which are available upon request. This is an authoritative publication summarizing the important scientific findings in connection with fluoridation and is in wide demand. In addition the Committee co-operated with the Canadian Medical Association in the preparation of a Joint Statement for the guidance of the public.

J. B. Macdonald, Chairman.

The Corps

Brigadier E. M. Wansbrough visited the Active and Reserve Force Dental Units in Western Canada during January. The DGDS was accompanied by Lt-Col G. B. Shillington, Commandant of the RCDC School.

Colonel Shillington presented a three-day progressive clinic to Active and Reserve Force officers at Winnipeg, Calgary and Esquimalt, B.C. He also made his presentation to a meeting of the Winnipeg Dental Society on the 18th of January. Reports indicate that the clinic was very well received.

Colonel C. B. H. Climo, Deputy Director General Dental Services, left Ottawa on 7 Feb. '54 for Korea, to in-

spect the R.C.D.C. installations in the Far East.

Capt. F. B. Lavoie, a dental graduate of University of Montreal in 1950, was appointed to the Royal Canadian Dental Corps as a Captain in 1950. While serving in Korea, he has been awarded a "Mention in Despatches." The citation reads: "Her Majesty the Queen has approved the award of a Mention in Despatches to ZB 3461 Capt. F. B. Lavoie in recognition of gallantry and outstanding service in Korea."

Major O. W. Crummey and Major J. M. Gabriel have been promoted to the rank of Lieutenant Colonel. Lt-Col Crummey was born in Greenspond, Newfoundland, and graduated in dentistry from Dalhousie University in 1938. Joining the CDC in 1940, he served in

Canada, England, North Africa and Italy. After the war he was stationed in Churchill, Manitoba, and is now serving in the Directorate of Dental Services, Army Headquarters, Ottawa. He is married and has one child.

Lt-Col Gabriel was born in Mulmur, Ontario, and graduated in dentistry from the Royal College of Dental Surgeons of Ontario in 1921. During the First World War he served with the Canadian Army Dental Corps and in the Second World War he served with the Canadian Dental Corps, in Canada and the United Kingdom. He retired from the Corps in 1945 and rejoined in 1947, serving in Kingston, Ontario and Winnipeg, Manitoba. He is married with no children. He will be employed at Calgary, Alberta.

Lt-Col A. E. Leman is attending a course on Crown and Bridge Prothesis at the US Naval Dental School, Bethesda, Maryland. This is a specialized dental training programme.

Lt-Col C. W. McCrary and Capt. J. E. Graff attended a refresher course on operative dentistry at the University of Toronto, from 15th February to 19th February '54.

Major A. T. Roger and Major G. C. Evans of the Royal Canadian Dental Corps School, Ottawa, were present at the Chicago Dental Society Mid-Winter Meeting, from 8th February to 11th February '54.

Capt. G. J. Lahaye has been posted to 35 Field Dental Unit for employment with the RCAF in Europe.

The Provinces

Ontario

At a recent meeting of the **London Dental Association**, Dr. George Kennedy, of St. Thomas, was made a life member. The presentation of the certificate of membership was made by Dr. S. M. Kennedy, of London, who spoke of the contributions made to his profession, his church and his community by Dr. George Kennedy.

Dr. Lorne Taylor, chairman of the dental public health and public relations committee, made the annual report of the committee at this meeting, and described the study undertaken by the committee to determine the efficacy of fluoridation of communal water supplies.

Guest clinician was Dr. Robert Moyers, of Ann Arbor, Michigan, who spoke on the possibilities and limitation of orthodontic treatment in general practice.

Head table guests included Dr. S. A. Moore, of London, and Dr. R. L. Revell, of Woodstock. Dr. D. E. Cousins, of London, presided over the meeting.

At a meeting of the **Lambton County Dental Society**, members heard James Hughes, representative of a London investment house, discuss investments in general and estate planning.

Dr. C. W. Carter, of Port Huron, told the meeting of a lecture to be given in May by Dr. Michael Walsh, of the University of California, on nutrition as applied to dentistry.

Dr. George Milne is President of the Lambton Society.

The University of Toronto **Dental Alumni Association** is planning a very active 1954. Recently a letter was sent to all graduates soliciting funds for the purpose of maintaining the Educational and Scholarship Fund, established to provide two \$200.00 bursaries for the pre-dental years in the Faculty of Dentistry, Toronto.

It was necessary to raise the membership fee this year to \$5.00 because of the rising administrative costs and reorganization of the University of Toronto Alumni Association. With this fee of \$5 the Dental Alumni Association will receive \$1.50 for its treasury.

The tentative plans for 1954 include:

- 1) Office visitations by students of the 1954 graduating class.
- 2) Increased campaign to stimulate membership.
- 3) The awarding of bursaries to pre-dental years.
- 4) Participation in and support of student activities.

The Annual Dinner of the Alumni will be held at the Homecoming week-end in October.

S. G. W.

The **Toronto Study Club of Dental Technicians** held its annual Christmas bowling night at the Olympia Bowling Alley, Toronto.

There was a particularly large gathering of members and representatives of the dental trade.

Don Ley did some exceptionally fine bowling to take the high single honours with a score of 379. Other prizes went to Herb. Elliott and H. Taylor.

After bowling refreshments were served at the King Edward Hotel, and the evening carried on with a social gathering and the distribution of prizes.

L. A. R.

About two hundred Fellows of the **Academy of Dentistry, Toronto**, gathered at Osler Hall on Thursday, January 14, to hear Dr. M. M. DeVan, Professor of Clinical Prosthetic Dentistry at the University of Pennsylvania present a new approach toward saving the denture foundation. Some time was spent in the beginning covering bone theory, the various kinds and uses. With the aid of Kodachrome slides, comparisons were made of bone structure in the natural dentition where teeth were supported by a periodontal membrane and dentures in place supported only by the mucoperiosteum. For good stability teeth should be replaced as closely as possible to the original natural position. Concern for retention is needless; it comes from stability. The President, Dr. E. J. Henderson was in the Chair and ably introduced and acknowledged Dr. DeVan's presentation. An enjoyable social hour with buffet refreshments concluded a very successful evening.

The January meeting of the **West Toronto Dental Society** held at the Old Mill featured a panel discussion of public interest. With the prevention of dental disease as its theme, Dr. Wesley J. Dunn, editor of the Journal of the Canadian Dental Association directed the proceedings and elicited some rather startling information.

Dr. George Knight of the Lakeshore

stated that studies with radioactive elements indicate that there is evidence to prove that calcium and other minerals might be withdrawn from a mother's teeth during pregnancy. Thus the "old wives' tale" of "for every child a tooth", may not be quite so fallacious. The same studies also proved that there is no such thing as a leak-proof filling.

Dr. Gordon Sayers, Orthodontist, stated that irregularities in growth and development resulting in malaligned teeth could be prevented by early examination and treatment.

Drs. M. E. Lucyk and A. W. S. Wood answered queries relative to treatment of infected teeth and some of the modern trends in dentistry for children.

Dr. Gordon Monteith provoked the most discussion with the topic of dental public health. The population of Canada is increasing at a much faster rate than dentists are being graduated, and if Canadians are to receive a high standard of dentistry all methods of prevention of dental decay, malocclusion and periodontal disease must be utilized. Dr. Monteith stressed emphatically the advisability of fluoridating drinking water. He compared Brantford children 6 to 8 years of age who have drunk fluoridated water all their lives with children in the same age group in Sarnia who have had ordinary drinking water. The children in Brantford had 62% less cavities. Dr. Monteith stated that anyone wanting to know the correct data on fluoridation could write to the Canadian Dental Association Headquarters, 234 St. George Street, and ask for the booklet, "Facts on Fluoridation", prepared by the Research Committee of the Canadian Dental Association and available free of charge.

H. E. L.

At the annual banquet of the **Thunder Bay Dental Association**, Dr. A. B. Kaukinen of Port Arthur was named president.

Other officers named for the coming year were Dr. C. A. Shaffer, of Fort William, vice-president, and Dr. W. B. MacDonald, of Port Arthur, secretary-treasurer. Representing other professions were Dr. S. Schiewe, medicine; S. Pugsley, law; J. Heney, pharmacy; and G. Cook, engineering.

Saskatchewan

Saskatoon Dental Society—The speakers for the January meeting were local

members Dr. F. Smith, and Dr. L. D. Haselton. Dr. Smith, a member of the Council of Saskatchewan College of Dental Surgeons, spoke at length of the work of that body. Dr. Haselton, Vice-Chairman of the Saskatchewan Board of Examiners, spoke on the critical situation existing today in Canada by way of a shortage of dentists. He referred somewhat at length to the discussions that took place at the Saskatoon meeting on Dental Education which was sponsored by the Kellogg Foundation.

L. D. H.

Quebec

With a record attendance of 104 members present, the **Montreal Dental Club** held its 56th Annual Meeting at the Queen's Hotel on Jan. 18. Following the complimentary dinner, **Pres. M. L. Donigan** opened the business meeting which was mostly concerned with a report on the Fall Clinic held last year in conjunction with the C.D.A.'s Annual Convention and the election of officers for the coming year.

In the President's report, Dr. Donigan commented on a successful year of club activities and expressed his pleasure with the way in which the members of the club had helped to make the C.D.A. meeting an outstanding success.

Dr. Donigan noted with regret the passing of Drs. C. H. Moore and George S. Cameron during the past year. Dr. Moore would have been eligible for honorary membership in the club at this meeting after 35 years of service. Dr. Cameron had been a member of the club for 47 years and had been a driving force in organizing the first Fall Clinic in 1925.

The club having attained a financial goal set some years ago, Dr. Donigan commended to the incoming executive the question of what best use could be made of the accumulated funds, and outlined a few suggestions that had been presented.

Dr. Frank Edwards was elected president for the coming year and Dr. Donigan relinquished the chair to him and greeted the new executive, consisting of Dr. Gordon P. Kelly as president-elect; Dr. Howard Oliver as secretary; Dr. Albert Pye as treasurer; Dr. Clayton Bourne as historian and archivist; and three new directors, Drs. Charles Asselin, George Dundass, and Ross Murray, to join with Drs. Norman Rogers, Paul Ramsay, and James McCutcheon presently serving as directors.

In accepting the chair, Pres. Frank Edwards praised the work done in the past year by Dr. Donigan and his executive. Others at the meeting joined with him in expressing their admiration for Dr. Donigan and his tremendous contributions to the club in past years. Dr. Dan MacDonald noted that Dr. Donigan had worked closely with 20 different presidents in the years that he was in charge of the annual Fall Clinic and all 20 had expressed sincere admiration for his contributions. Dr. MacDonald marvelled at the tact, diplomacy and consideration necessary to accomplish this and thought it particularly remarkable for an Irishman to have done it!

President Frank Edwards urged the members to attend the Club's annual Winter Meet to be held this year at the Chantclair in Ste. Adele the first weekend in February, and mentioned the curling facilities now available. Dr. Kelly closed the program by showing movies of past winter gatherings.

The January Meeting of **The Montreal Endodontia Society**, held in the lecture room of the Dental Faculty of McGill University, had as its speakers some fifteen members of the society itself. The evening was devoted to presentation of problem and other interesting cases by the members and from the evidence of the x-rays shown it is obvious that the field of endodontia is a considerably varied one. Discussions followed most presentations, but the most spirited discussion took place over the problem of when—if ever—to leave a root canal open to the oral cavity. The reviewer not being an endodontist, would certainly not present any opinion on the subject, but he would be interested in requesting the two sides to present their arguments in writing so that they could be published in *The Journal* side by side at some future date.

R. A. H.

Dr. Paul Geoffrion, D.D.S., Vice-dean of the Faculty of Dental Surgery of the University of Montreal has just been elected honorary member of the Turkish Odontological Society.

Dr. Geoffrion has agreed to give a series of post-graduate lectures at Istanbul University (in Turkey) in mid-July.

Newfoundland

The past year has been a very busy one for the Newfoundland Dental Association. Many Association and special Committee Meetings were held concerning reorganization and ways and means to assist the Provincial Department of Health with their dental programme in Newfoundland. The Newfoundland Dental Board is to be commended for the tremendous amount of time and work and the end accomplishments this past year.

Seven new dental practitioners have established dental practice here during the year 1953, and the overall picture of adequate dental services for the population of Newfoundland is very bright indeed.

The Association was highly honoured during December by the Annual visit of Dr. A. J. Coughlan and Dr. D. W. Gullett, President and Secretary of the Canadian Dental Association respectively. During their visit various meetings were held amongst Association members and the Newfoundland Dental Board with Department of Health Officials, and many points in question cleared up.

On the evening of December 14th, a dinner was tendered our honoured guests at the Newfoundland Hotel. Chairman for the evening was Dr. G. E. Mallam. Both Dr. Coughlan and Dr. Gullett addressed this gathering, amongst which were many civic and other professional representatives. The evening was thoroughly enjoyed by all present. We are already looking forward to the next visit of the President and Secretary of the C.D.A.

The Annual Meeting of the Newfoundland Dental Association was held in February of this year at Grand Falls. G.E.M.

British Columbia

In February the **Vancouver and District Dental Society** heard lectures in the afternoon and evening by D. Harold Copp, M.D., Ph.D., Professor and Head of the Department of Physiology, U.B.C. His subjects were "Recent Advances, Physiology of Bones and Teeth" and "Use of Radioactive Tracers in Study of Bones and Teeth".

The society has arranged for a fully equipped two-chair dental clinic at the University of B.C. to take care of the emergency treatment of athletes competing in the **British Empire Games** to be

held in Vancouver from July 15 to August 14. It is planned that sixty volunteers from Vancouver will donate their services for one day.

The **Victoria and District Dental Society** held a very successful no-host party in December at the Empress Hotel for wives and members. Appointed to lecture to the nurses-in-training at the Jubilee and St. Joseph's hospitals were Drs. R. H. Trythall, W. A. Dennis, K. L. Moysey, W. G. Dempsey and Alan Day-smith. At the January meeting the speaker was one of the members, Dr. Alex Gunning, who gave an interesting talk on operative dentistry followed by a film.

Creation of a dental faculty at the University of British Columbia has been urged by a delegation from the **B.C. College of Dental Surgeons** in a brief presented to the Provincial Cabinet on January 19. The delegates added their voice to a growing chorus of demands from a great variety of organizations all over B.C.

"Many rural areas have no dentist available and in those which have, people experience great difficulty in getting appointments," the brief said. Metropolitan areas are served by one dentist to every 1566 of population, but rural areas representing a population of 425,000 or 40 per cent of B.C.'s entire population, are served by only 84 dentists. "This," said the brief, "is a ratio of one dentist to 5036 people. This state of affairs is pathetic to say the least."

The delegation, which included Dr. H. M. Cline, of Vancouver, President of the B.C. College of Dental Surgeons, Dr. J. C. Foote, Dr. T. H. Johns and Dr. Arthur Poyntz of Victoria, and Dr. William Miller, of Vancouver, traced the steps taken by the college to encourage graduates to come to B.C. But in spite of these steps, the delegation said, an average of only 30 dentists a year have come to B.C. during the past four years.

To take care of B.C.'s expanding population and to compensate for deaths and retirements among the dental population, B.C. needs between 40 and 50 graduates a year, the delegation claimed. "It cannot be too strongly emphasized that the institution of a dental faculty at the university, graduating 50 dentists annually, would be the only solution to this problem. Such a course has the wholehearted support of the College of Dental Sur-

geons of B.C., and every possible support will be given to the faculty from individual dentists and from the profession as a whole."

Dr. Cecil Helmer, Vancouver's sea-going dentist, topped the mob at the Royal Vancouver Yacht Club on New Year's Day to win two out of three frost-bite

dinghy sailing races and the Stan Brooke trophy. One of the top star boat sailors in these parts, he earned 56½ points to stay in front of the next star-boater, who had 51. It was cold at Jericho where the races were held, and all skippers showed proper respect for the cold and stayed upright. Not one had to be fished out, which augurs well for the coming season.

D. H. M.

In Memoriam

William H. Keller.—Dr. William H. Keller of Vancouver, B.C., aged 61, passed away on January 14, 1954. Born in Sherbrooke, Que., he graduated from the University of Oregon in 1917, and began practice in British Columbia in the same year.

Dr. Keller was a lieutenant in the Canadian Dental Corps in World War I and lived in Vancouver for 30 years.

Surviving are his wife, two sons, three daughters, three grandchildren and one sister.

Henry P. Travers.—Dr. Henry P. Travers of Saint John passed away on January 19th, after three years of ill health. He was in his 87th year.

Born in Saint John, Dr. Travers was educated at St. Mary's (Jesuit) College in Montreal, and at Holy Cross College, Worcester, Mass. He graduated from the New York College of Dentistry, and then returned to Saint John to practise until the outbreak of World War I, when he enlisted in the Canadian army. He served overseas with the 1st Canadian Dental Corps, and established the first dental clinic with the British Army. After demobilization in 1919, he returned to Saint John where he practised until retiring four years ago.

Dr. Travers was an honorary life member of the New Brunswick Dental Society, and a member of the Saint John Dental Society. He was also a member of the former ancient Order of Hibernians.

Throughout his residence in Saint John, Dr. Travers was a member of the Cathedral Parish and of the Holy Name Society in that Parish.

Surviving are one sister, Miss F. M. Travers, three nieces and three nephews.

Robert Turnbull MacDonald.—Dr. Robert Turnbull MacDonald of Hamilton died suddenly on January 20th, 1954. He was 78.

Born in Galt, of Scottish descent, Dr. MacDonald received his early education in that city. In 1901 he graduated from the Royal College of Dental Surgeons, and then in 1914 he took a post-graduate course in orthodontics. For several years after graduation he was in general practice in London, Ont., and then moved to Hamilton where he practised, specializing in orthodontics, until his retirement a few years ago.

Dr. MacDonald was district representative of the Royal College of Dental Surgeons in 1932, and was elected to the Board of Governors in 1934. In 1951 he was made an Honorary Member of the R.C.D.S. He was also a Past-President of the Hamilton Academy of Dentistry.

Dr. MacDonald was a member of the Presbyterian Church. He also belonged to the Chedoke Golf and Country Club, and Burlington Golf and Country Club.

He is survived by two brothers—Arthur of Castlegar, B.C., and John, of Toronto.

Reginald Clarke Parbery.—Dr. Reginald Clarke Parbery of Victoria, B.C. passed away recently, aged 63 years.

Born in Victoria, he was educated at the Boys' Central and Victoria High School. He graduated from the North Pacific College of Dentistry, Portland, Oregon, in 1926, and has practised in Sydney and Victoria since then.

Dr. Parbery was a member of the Mount Newton Lodge, No. 89, A.F. and A.M.

He is survived by his wife, Lila, and one sister, Mrs. R. S. Irvine of San Carlos, Calif.

Dr. Philippe Hamel

Canadian dentistry lost a prominent member and the citizens of Quebec a distinguished personality when Philippe Hamel died on January 22nd, 1954.

Born in Quebec City on the 12th of October 1884, the second of a family of seven, Philippe Hamel was the son of the late Charles Auguste Hamel, M.D., and Sophie Vallières. At the age of ten he entered "Le Petit Séminaire de Québec" where he ended his classical studies in 1903, obtaining the degree of Bachelor of Science.

After two years in the Medical School of Laval University and two years in the Dental Faculty of the University of Montreal, he received his D.D.S. degree in 1907. Following graduation he returned to Quebec City where he practised continuously since that time. Dr. Hamel, by his professional dignity and courtesy and his excellent dental services, built up a remarkable dental practice which he shared with his associates and his two sons, Jules and Henri. He was the senior member of a group practice of five. Besides his private practice, Dr. Hamel taught the medical students of Laval and was chief of the Dental Services of the Hopital St. Sacrament, Hôpital de L'Enfant Jésus, and the Hôtel-Dieu du Sacré-Coeur of Quebec City.

During his professional career he occupied many important posts and many honours were bestowed upon him because of his very valuable services. Dr. Hamel has been a Governor of the College of Dental Surgeons of the Province of Quebec, 1924-34, also President of "La Société de Stomatologie de Québec", and was a Governor and President of the Canadian Dental Association in 1932-33. He also was Chairman of "Le Congrès des dentistes de Langue Française de l'Amérique de Nord" in 1941, and was made an honorary member of "L'Association Franco-Américaine" in 1945.

He was also a member of the following societies and associations: The American Academy of Dental Medicine, L'Académie Internationale d'Odontologie, L'Institut Canadien, La Société Symphonique de Québec, Le Club Richelieu de Québec, The Rotary Club of Quebec and La Ligue de L'Action Nationale.

As the first editor of the French Section of the Journal of the Canadian



Dental Association, he has been a true pioneer of French dental journalism in Canada. His aim at all times was to give the highest form of dental material in perfect French style. His mastery of both the French and English languages was a great asset to the Journal and to the Canadian dental profession.

From 1935 to 1939 he made an excursion into the political field of his Province. As a Member of the Quebec Legislative Assembly for that period he conducted a violent campaign against certain trusts which he felt were detrimental to the welfare of the people of his Province. By the honesty and the sincerity of his convictions he was equally appreciated by his friends and his opponents.

Quebec City will regret the loss of a distinguished personality. His culture and sociability created around him in his city and in Canada at large groups of friends and admirers.

Surviving Dr. Hamel are his wife, the former Georgine Normandin, and six children, Jules Hamel, D.D.S., Henri Hamel, D.D.S., Mrs. Paul Audet (Therese), Mr. Guy Hamel, Mrs. Jacques Larue (Yolande) and the Reverend Edouard Hamel, S.J.

Gustave Ratté

John Donald Cameron.—Dr. John Donald Cameron of Renfrew, Ontario, died at his home on January 27th, at the age of 83.

Born in Douglas, Ont., he moved to Renfrew with his family in 1883, where he attended high school. He graduated from the Royal College of Dental Surgeons in 1894, and practised in Renfrew until his retirement in 1948. Dr. Cameron was elected an honorary member of the Royal College of Surgeons in 1944, his 50th year in practice.

He was a member of the Renfrew Presbyterian Church.

Well known in curling circles, in his younger days Dr. Cameron was a member of the Renfrew rink which won the Governor General's Trophy in 1920, and the Chateau Frontenac Cup in 1925. Some years ago he was made honorary president of the Renfrew Club.

Dr. Cameron is survived by his brother, W. A. Cameron of Renfrew, four nephews, and a niece.

Thomas Angus Skinner.—Dr. Thomas Angus Skinner of Calgary died in hospital on Sunday, January 10th. He was 64 years of age.

Born in Calgary, Dr. Skinner attended Acadia University, graduating with a B.Sc., and the Chicago School of Dental Surgery where he obtained his dental degree. He then practised in Calgary for over 30 years, until retiring to Banff in 1948.

Dr. Skinner served with the Canadian Dental Corps during both the first and second world wars.

He was a member of the Knox United Church, and also a member of the Southern Alberta Pioneers and Old Timers' Association, Perfection Lodge No. 9 A.F. and A.M.; and a charter member of the Kinsmen Club.

Surviving Dr. Skinner are two sisters, Mrs. J. W. Richardson and Mrs. F. E. Staines of Calgary; a brother, William Skinner of Calgary; and three nephews and one niece.

Orville Arthur Elliott.—Dr. Orville Arthur Elliott of Toronto died on Monday February 1st, 1954. He was 69 years of age.

Dr. Elliott graduated from the Royal College of Dental Surgeons in 1910, and

practised in Toronto since that time.

During the First World War, whilst serving as an officer with the 5th Canadian Field Ambulance, he was decorated with the D.S.O. and Bar, having been wounded twice at the Somme and again at Passchendael.

In 1908 Dr. Elliott was a Canadian representative to the Olympics. He was a noted paddler, and held the Dominion tandem canoeing championship.

Surviving Dr. Elliott are his wife, the former Mary Hughes; a daughter, Mrs. C. A. Enright; two sons, Dilwyn and John O.; and two brothers, Alex and Fraser.

Benjamin Bernfeld — Dr. Benjamin Bernfeld, 53, of Montreal died on January 23rd, after a long illness.

Born in Montreal, he was educated at Montreal High School, and graduated from McGill University in 1921.

Dr. Bernfeld was a member of and officer of the Mount Royal Dental Society, Shaar Hashomayim Synagogue, and the Lodge of the Covenant No. 108, AF and AM.

He is survived by his wife, the former Clara Adelstein; twin sons, Allan and Arthur; his mother, Mrs. Leah Bernfeld; two brothers and four sisters.

Lorne David Steele.—Dr. Lorne David Steele of Regina passed away in hospital on Monday, January 11th, at the age of 72.

Dr. Steele was born and educated in Almonte, Ontario. He graduated from the University of Toronto in 1905, and then moved to Regina where he practised until retiring in 1949.

He enlisted in the Dental Corps in 1915, and was not demobilized until 1920, when he resumed practice.

Dr. Steele is survived by a brother, Dr. W. H. Steele of Arnprior, Ont.

J. Raoul Hébert.—Dr. J. Raoul Hébert of Shawinigan Falls died on January 12th 1954 at the age of 62 years.

Dr. Hébert became the first resident dentist of Shawinigan Falls in 1917. He served two terms as a Governor of the Province of Quebec Dental College and was one of the founders of the Chamber of Commerce in Shawinigan Falls.

Surviving are his wife, three sons and two daughters.

NATIONAL DENTAL EXAMINING BOARD OF CANADA

REGULATIONS FOR CANDIDATES

1. The National Dental Examining Board of Canada issues a certificate to successful candidates which may be registered with any or all Canadian Provincial Licencing Boards for the purpose of securing a licence to practise in the respective province.
2. Candidates must possess the following qualifications:
 - (a) be a Canadian citizen.
 - (b) have proof of matriculation as established by the Council on Dental Education of the Canadian Dental Association before beginning the study of dentistry.
 - (c) have taken a minimum of two complete academic years, equivalent to two years liberal Arts and Science of a recognized university.
 - (d) have successfully completed four academic years of professional education in a dental school approved by the Council on Dental Education of the Canadian Dental Association.
 - (e) hold a degree in dentistry from a school of dentistry approved by the Council on Dental Education of the Canadian Dental Association.
 - (f) hold an Enabling Certificate from a Canadian dental licencing body.
3. The examination consists of written papers (in English or French) in the following subjects:
 - (a) Operative Dentistry
Prosthodontics
Preventive Dentistry (including all aspects of Dentistry for Children)
Oral Surgery, Anaesthesia, and Pathology
Oral Medicine (including Periodontics and Endodontics)
Ethics, Jurisprudence, and Practice Management.
 - (b) Oral examination (in the application of basic sciences to Clinical Dentistry)
4. Examination books only will be supplied to the candidates at the time of examinations. Candidates will supply their own pen and ink.
5. The following rules apply to the examination:
 - (a) The percentage necessary to obtain a pass shall be 60 per cent of each examination subject.
 - (b) Oral examinations of two half-hour periods are held at Faculty centres only, at a time preceding or following the written examinations.
 - (c) All candidates will be designated in such a manner as to be not identified by the examiner.
 - (d) Candidates failing to obtain the required percentage on one subject may be re-examined in that subject once only at a regular examination and thereafter shall be required to repeat the entire series of examinations in order to qualify.
 - (e) Candidates failing in more than one subject shall be required to repeat the entire series of examinations in order to qualify.
 - (f) In case a candidate fails in not more than one written subject, and obtains a mark of 50% or over such paper shall be reviewed by three examiners, their decision to be final.
6. Annual examinations are held commencing on an announced date as soon as expedient following the final examinations of the Canadian Dental Schools. A special examination may be provided if required, during the fall months at a time to be determined by the Board. The cost of this special examination shall be borne by the candidate(s). Examination dates will be announced at least three months in advance of the examinations.
7. The examination fee is one hundred and twenty-five dollars (\$125.00) and certified cheque or money order for this amount must accompany application form. Information respecting the cost of special examination may be obtained from the Secretary.
8. In case of an irregularity committed by a candidate during an examination, the Presiding Examiner shall remove the candidate's examination book and any items to be submitted as evidence; provide the candidate with a new book and allow him to proceed with the examination during the balance of the normal examination period and finally, at the conclusion of the examination submit a written report in full to the Secretary describing the circumstances supported by any evidence collected.
9. Application on the proper form must be submitted to The Secretary, National Dental Examining Board on or before April 15th, in order to be acceptable for the annual examination. Application forms may be secured at the office of your Faculty or by writing the Secretary. All correspondence relating to N.D.E.B. should be addressed to:

Dr. H. N. B. Beach, Secretary,
National Dental Examining Board of Canada.
150 Metcalfe Street,
Ottawa, Canada.

Note: Clinical examinations, if desired, may be conducted by a Provincial Licencing Body.

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1954	St. Andrews By The Sea, N.B.	September 5th - 8th
1955	Toronto, Ontario	May 15th - 18th
1956	Banff, Alberta	June 3rd - 6th

Future Events

Date	Function	Location	Officer	Address
March 19-20	Convention of B.C. Dent. Assoc.	Victoria	Dr. M. J. Dohan	602 Scollard Bldg., 1207 Douglas St. Victoria
May 14-15-16	American Academy of Dental Medicine Annual Meeting	Philadelphia, Pa.	Dr. William Greenhut	124 East 84th St. New York 28, N.Y.
May 15	Meeting Canadian Society Dent. for Children	Toronto	Dr. D. L. Rife	3014 Bathurst St. Toronto
May 16-19	Convention—Ontario Dental Association	Toronto	Miss D. Jutton	234 St. George St. Toronto
May 17	4T3 Class Reunion	Toronto	Dr. E. B. Hooks	788 Eglinton Ave. E. Toronto
May 17	1T4 Class Reunion	Toronto	Dr. E. H. Campbell	171 Yonge St., Toronto
June 1-5	Pacific Coast Dent. Conference	Banff	Dr. H. Baden-Powell	308 Greyhound Bldg. Calgary, Alta.
July 6-9	American Dental Soc. of Europe	Paris, France	Mr. J. P. Malony	110 Harley Street, London W.1., England
Sept. 5-8	Canadian Dental Assoc. & New Brunswick Dental Society Convention	St. Andrews-by-the-Sea	Dr. S. K. Whetmore	147 Germain St., St. John, N.B.

Short Graduate Courses

Date	Course	Location	Address
Apr. 5-9	Orthodontics	Univ. of Toronto	The Dean, Faculty of Dentistry, 230 College St., Toronto.
Apr. 11-15	Inlay Construction	Tufts College Dental School	Dr. Irving Glickman, Tufts College Dental School, Div. of Graduate & Postgraduate Studies, 136 Harrison Ave., Boston 11, Mass.
Apr. 14-16	Clinical Occlusion	Temple University	As Above
Apr. 26-30	Periodontics	Univ. of Toronto	As Above
May 3-7	Dental Oral Surgery	Univ. of Toronto	As Above
July 12-16	Oral Pediatrics	Tufts College	As Above

Journal

DE L'ASSOCIATION DENTAIRE CANADIENNE

Les ostéomes fibreux périapicaux ou cémentomes*

par JEAN FONTAINE, B.A., D.D.S., Montréal.

Introduction

Une revue complète de la littérature traitant des cémentomes, révèle que Brophy (1), en 1917, fut le premier à mentionner cette lésion comme une entité distincte. Depuis, malgré un grand nombre de communications sur le sujet, il y a encore des contradictions sur l'étiologie et la nature réelle de cette tumeur.

Une étude basée sur les histoires de cas de 228 patients souffrant de cette lésion sera de nature à en faciliter le diagnostic et par ce fait aidera à sauver un grand nombre de dents inutilement sacrifiées.

Synonymes et nomenclature

La confusion règne dans la terminologie utilisée pour décrire ces lésions. On emploie les synonymes suivants: cémentoblastome, dysplasie fibreuse, ostéite fibreuse localisée, granulome syphilitique, fibrome pé-

riapical, cémentome radriculaire, fibrome périapical ossifié, fibrose périapicale avec formation de cémentomes, ostéome ostéoïde, ostéo-fibrome, et ostéo-dystrophies localisées; tous ces termes servent à décrire les vrais cémentomes ou encore (un nom plus approprié) les "ostéomes fibreux périapicaux". La diversité des appellations repose sur les différentes théories expliquant leur étiologie et sur les nombreuses observations histologiques faites durant leur élaboration.

Thoma (2) juge le terme "cémentoblastome" des plus descriptifs, parce qu'il attribue la lésion à une hyperplasie des cémentoblastes de la membrane péri-dentaire, hyperplasie qui produit une ostéolyse suivie de la formation de cémentomes. McCall et Wald (3) prêtent à cette tumeur les caractéristiques d'une ostéo-fibrose localisée; ils la nomment ostéo-fibrose périapicale, parce qu'elle se montre à l'apex de la dent. Stafne (4), en 1933, la nomme cémentome et en 1934 (5) ostéo-fibrose

* Travail préparé par l'auteur pour l'obtention d'un certificat de compétence en diagnostic buccal et radiologie.

* L'auteur désire témoigner sa reconnaissance au docteur Edward V. Zegarelli, chef du service de Diagnostic du School of Dental and Oral Surgery de l'Université Columbia, New York.

avec formation de cémentome; plus tard, en 1943, il l'appelle fibrome périapical, en se rapportant à son développement initial (6). Thompson (7), Miller (8), Dewey (9), Bernier (10), Thoma, Cascario et Braccivicz (11), Zegarelli et Ziskin (12), Demaree (13), Grant et Hendrick (14), se servent du terme cémentome. Ennis (15), écrit que: "en nous basant sur plusieurs années d'observation et sur des études microscopiques de cette lésion, nous croyons que le terme le plus juste pour la décrire est "fibrose périapicale". L'appellation préférée de Ewing (16) est "fibro-ostéome", tandis que Glickman (17) utilise "dysplasie fibreuse de l'os alvéolaire". Pancoast et al (18) ont appelé cette lésion "granulome syphilitique" parce qu'ils croyaient qu'elle était causée par la syphilis. Zegarelli (19) préfère le terme fibro-ostéome périapical.

Le résultat de nos observations nous incite à préférer le terme "fibro-ostéome périapical", parce qu'au point de vue histologique, il décrit mieux la nature de la lésion. Le mot "périapical", parce que la lésion se trouve toujours à l'apex de la dent; "fibreux" parce que, dans les premiers stades, la région ostéolytique a une structure fibreuse; et "ostéome" parce que à la longue, la zone se calcifie, jusqu'à une calcification complète et même une hypercalcification.

Définition

Voici donc une définition du fibro-ostéome périapical: néoplasme bénin circonscrit à l'apex de la dent, qui découle de la prolifération fibro-blastique des cellules du tissu conjonctif de la membrane périodontaire, et qui se caractérise par son activité ostéoblastique produisant sa calcification.

Littérature

Pour en faciliter la compréhension, le travail est divisé en trois parties:

(a) Fréquence et site

(b) Étiologie

(c) Histopathologie.

Fréquence et site: Colyer (20), en 1910, et Dewey (21), en 1926, croyaient que ces tumeurs se rencontraient plus fréquemment chez les chevaux que chez les hommes. Widdowson et Widdowson (22) ont aussi observé que les cémentomes se développent plus souvent chez les chevaux et chez les ruminants que chez les humains. Stafne (23) déclare que les cémentomes sont les néoplasmes les plus souvent observés dans les mâchoires. Ennis (15) a constaté que ces tumeurs sont plus fréquentes aujourd'hui qu'il y a 15 à 20 ans. Zegarelli et Ziskin (12) ont attiré notre attention sur le rôle des facteurs sexuels dans l'étiologie de ces néoplasmes. Bradley (24) aussi, a rapporté une prédominance de cette tumeur, chez les femmes.

On semble s'entendre sur le fait que le fibro-ostéome périapical apparaît surtout dans la région antérieure de la mandibule. Thompson (7) a compilé des statistiques qui indiquent la prédilection de cette tumeur pour le maxillaire inférieur: 17 contre 1. D'autres (25) (26) donnent les chiffres suivants: 5: 1 et 23: 1.

Étiologie: Plusieurs théories expliquent l'élaboration du fibro-ostéome périapical. Parmi celles-ci, on mentionne des maladies organiques, syphilis, traumatisme aigu ou chronique, irritations chroniques, quelconques, infections d'autre nature, influence des glandes endocrines et anomalies congénitales.

Thoma (27) dit que l'étiologie est peut-être d'ordre constitutionnel, puisque les ostéomes fibreux périapicaux sont souvent multiples. Dewey (21) croit que ces néoplasmes proviennent de l'action combinée de deux facteurs: constitutionnel (prédisposant) et local (déterminant).

Bland-Sutton (28) associe cette lésion au rachitisme. Pancoast et al (18) attribuent à la syphilis un rôle étiologique dans plusieurs de ces lésions.

De nombreux chercheurs, comme

Stafne (4), Bodner et Bodner (29), Demaree (13), Thompson (7), Miller (8) et Lefkowitz (30) mettent en cause différentes sortes de traumatismes tels que blessures et coups, occlusion traumatique, mastication fautive, manie de couper des fils avec les dents, pression anormale d'appareils, etc.

Cahn (31), Ennis (15) et Widdowson et Widdowson (22) pensent que les fibro-ostéomes périapicaux sont les résultats d'irritations chroniques de toutes sortes.

Se basant sur une étude de 50 cas de fibro-ostéomes périapicaux constatés chez des femmes, Zegarelli et Ziskin (12) rapportent que "puisque tous les cas que nous avons observés ont été trouvés chez des femmes, nous croyons que les hormones féminines jouent un rôle important dans l'étiologie."

Dewey (21) dit que ces épaississements anormaux du ciment sont congénitaux.

Scannell (25) tire la conclusion que l'étiologie des cémentomes est imprécise.

Histopathologie:

La littérature sur l'histopathologie des fibro-ostéomes périapicaux, nous offre une confusion telle des termes, qu'il semble nécessaire de définir et différencier ce qu'on entend par cémenticles et cémentomes.

D'après Kronfeld (32), les cémenticles sont des masses calcifiées trouvées dans la membrane périodentaire des dents d'adultes. Ils sont ordinairement petits, mais très nombreux. La plupart des auteurs ont décrit ce procédé comme une déposition concentrique de ciment autour d'un point central. Gottlieb (33) croit que les cémenticles s'élaborent par la déposition de ciment sur les cellules en dégénération du restant de l'enveloppe de Hertwig.

D'après Cahn (31), les cémenticles résultent de "la calcification des cellules épithéliales, reliefs de la gaine de Hert-

wig . . . dans la membrane périodentaire". Orban (34) fait les distinctions suivantes; i.e. les cémenticles peuvent demeurer libres dans le tissu conjonctif ou se grouper en masses calcifiées assez grosses, ou encore se fusionner avec le ciment normal.

Mikola et Bauer (35) ont remarqué que les cémenticles en masses calcifiées sphériques sont dans la membrane périodentaire et que ces cémenticles proviennent d'une ou plus des cinq sources différentes: reliefs épithéliaux calcifiés, tissu conjonctif calcifié dystrophiquement, petites esquilles de ciment ou d'os alvéolaire dirigées dans la membrane périodentaire par un traumatisme ou par le mouvement physiologique de la dent, fuseaux calcifiés de Sharpey, capillaires thrombosés et calcifiés dans la membrane périodentaire. C'était leur opinion que la fusion des cémenticles libres autour de l'apex de la dent n'est pas considérée comme un vrai "cémentome".

Bernier et Thompson (26) rapportent que sur 15 cas de cémentomes, 5 montraient clairement une élaboration histologique de cémenticles.

En 1921, Gottlieb (33), un des premiers histologistes à mentionner les cémentomes, suggère que ces tumeurs en formation ont, comme points de concentration, les cellules épithéliales dégénérées des reliefs de Mallassez. Bauer (36) est d'avis que les cémentomes proviennent des fragments libres de ciment ou de vaisseaux sanguins thrombosés.

Grant et Hendrick (14) et Thompson (7) attribuent la formation des masses de ciment présentes dans les cémentomes à une perturbation cellulaire qui donne naissance au néoplasme, qui par la suite, s'accapare de cémenticles et d'os.

Dewey (9) note la caractéristique spéciale de leur structure histologique, de leur origine et de leur élaboration; il dit qu'au point de vue histologique les cémenticles diffèrent des cément-

tomes. Mikola et Bauer (35) sont de la même opinion.

Stafne (4) et Bradley (24), disent que les cémentomes résultent de la prolifération du tissu conjonctif de la membrane périodentaire.

Dans une étude basée sur 65 cas, Stafne (5) trouve que les masses de tissu fibreux, contiennent des cellules ostéogénétiques capables de produire des cémenticles et de l'os normal; i.e. ces cellules sont des cémentoblastes et des ostéoblastes. Il conclut que la fibrose périapicale peut prendre différents aspects: (a) amas fibreux pouvant se transformer en ciment; (b) le tout peut rester sous forme de cémentoblastome ou de fibrome pour une période de temps indéfinie, ou (c) le tout peut s'ossifier.

Puisque les cémentomes proviennent du follicule dentaire, Thoma (37) dit qu'ils prennent naissance soit de la région apicale de ces follicules ou de la membrane périodentaire, qui est en somme, le dernier organe que ce follicule forme.

Glickman (17) a observé un cas sous le microscope et y a trouvé un grand nombre de trabécules d'os sphériques et des ostéoides du collagène de tissu conjonctif, de nombreux fibrocytes, plusieurs ostéoblastes et quelques ostéoclastes.

Cahn (31) a fait l'examen histologique d'un fibro-ostéome périapical dans son stage embryonnaire et n'a pu faire la différenciation entre un granulome et des cellules osseuses sclérosées.

Bodner et Bodner (29) ont remarqué que l'aspect histologique de ces lésions se voit à différents stades; i.e. la destruction de l'os qui est remplacé par du tissu fibreux, la déposition de lamelles de ciment, et finalement la calcification.

Bernier et Thompson (26) sont d'avis qu'à leur stage initial les cémentomes sont constitués par une fibrose de la membrane périodentaire, et que celle-ci

peut produire de l'os et du ciment sous l'influence des cellules du tissu conjonctif fibreux non différencié. Ils doutent que ces fragments libres de ciment ou que des vaisseaux sanguins thrombosés puissent former le centre des cémenticles.

Cas observés et méthode de travail

Cette étude des fibro-ostéomes périapicaux est basée sur un groupe de 228 patients observés pendant une période de 15 ans. Ces patients, en grande partie, fréquentaient la clinique de diagnostic du School of Dental and Oral Surgery de l'Université de Columbia, New York. A peine une dizaine de patients étaient de l'extérieur et avaient été référés par des dentistes pour un diagnostic et des renseignements concernant ces lésions. Parmi ces 228 patients, 50 ont déjà été rapportés par Zegarelli et Ziskin (12) en 1943.

Tous les patients sur lesquels on a découvert des fibro-ostéomes périapicaux ont subi un examen clinique et radiologique complets, suivis d'une histoire de cas détaillée, où furent notés les renseignements suivants: nom, âge, sexe, race, occupation, état matrimonial, nombre de grossesses et histoire médicale, comprenant les maladies organiques passées et présentes.

A l'aide d'un vitalomètre S.S.W. No 2, on vérifia le degré de vitalité de toutes les dents soupçonnées d'être entourées d'un fibro-ostéome à leur apex; de même, on utilisa d'autres tests, tels que la percussion, le froid et le chaud. On a aussi tenu compte de la teinte des dents, de leur position sur l'arcade, des caries et des obturations. Un questionnaire précis notait les facteurs extérieurs susceptibles d'entrer en cause dans l'étiologie de ces tumeurs, tels que: traumatismes, habitude de couper du fil avec les dents, occlusion traumatique, chocs, accidents, habitudes etc.

Pour simplifier les statistiques et pour n'y pas inclure les fibro-ostéomes

d'origine générale, nous avons laissé de côté les fibro-ostéomes trouvés dans les régions édentées.

Diagnostic

Pour différencier les fibro-ostéomes périapicaux des autres lésions semblables, il faut établir des critères spécifiques qui serviront au diagnostic. Les autorités s'entendent pour identifier le fibro-ostéome périapical aux signes positifs ou négatifs ou aux symptômes cliniques, radiologique et biochimique suivants:

Données cliniques: teinte normale des dents; vitalité normale indiquée par des épreuves électriques ou par les tests objectifs faits avec la chaleur, le froid et la percussion; absence de douleur et des réactions inflammatoires de la région; i.e. gencives et muqueuses normales.

Signes radiologiques: dentaire. L'évidence radiologique du fibro-ostéome périapical repose sur le stage où on le découvre.

1. Premier stage: (fig. 1)

C'est à ce stage que le fibro-ostéome périapical montre ses premières manifestations radiologiques. Une ou plusieurs régions radio-translucides peuvent apparaître dans une bouche, chacune entourant l'apex d'une dent. Dans la plupart des cas, la symétrie des mâchoires persiste. Cependant, il peut arriver qu'un nombre considérable de lésions détermine une asymétrie de la figure. Le volume et la forme de ces zones anormales peuvent varier de 2 mm. à plusieurs centimètres. Elles peuvent aussi être très bien délimitées ou avoir des contours très irréguliers. Dans certains cas, il y a fusionnement de plusieurs zones translucides, qui ne forment qu'une masse assez volumineuse. Si on étudie attentivement les radiographies, on notera la disparition de la membrane périodentaire et de la lamina dura; cette constatation suggère une pathologie périapicale. Néanmoins, la forme de l'apex est bien déter-

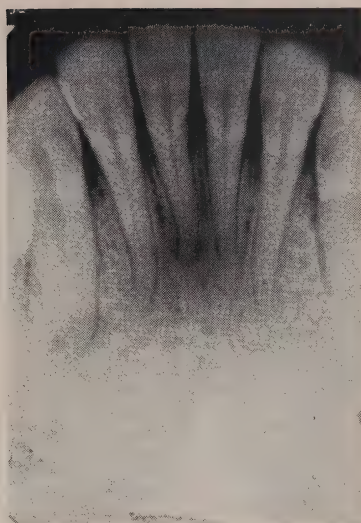


Fig. 1

minée et apparaît tout à fait normale à l'examen radiologique.

2. Deuxième stage: (fig. 2)

Le deuxième stage, ou le stage intermédiaire, laisse voir distinctement la calcification de la partie centrale de la région intéressée; parfois cette calcification apparaît près de la périphérie.



Fig. 2

Les régions opaques sont entourées de zones translucides. Ici encore, la membrane périapicale et la lamina dura perdent leurs caractères. Le fusionnement des lésions amène des régions radio-opaques plus ou moins considérables.

3. Troisième stage: (fig. 3)

Le dernier stage du fibro-ostéome périapical constitue la phase "ostéomatite", dans laquelle les endroits radiotranslucides ont presque ou complètement disparus pour être remplacés par du tissu calcifié et même hypercalcifié. Dans certains cas, la membrane périapicale et la lamina dura apparaissent clairement comme des structures spécifiques.

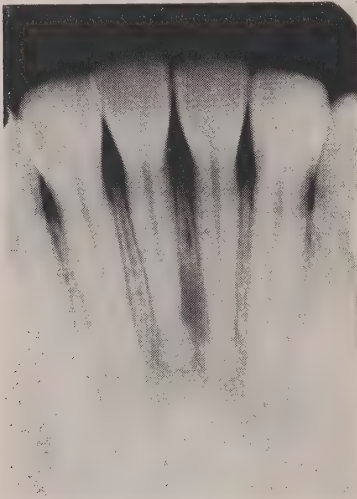


Fig. 3

Constatations radiologiques: constitutionnelles:

Le fibro-ostéome périapical est une lésion qui est localisée uniquement à l'apex de la racine des dents, sans qu'on retrouve (fig. 4) la même anomalie osseuse dans les autres os du corps.

Données du laboratoire.

Au point de vue organique, la formule bio-chimique du sang des porteurs

de fibro-ostéomes est négative: les taux de calcium, des phosphates et du phosphore sont normaux: c'est là une des caractéristiques essentielles de ces lésions. En résumé, on peut dire qu'il n'y a pas encore d'examen de laboratoire qui puisse être utilisé pour décélérer ou diagnostiquer les fibro-ostéomes périapicaux.

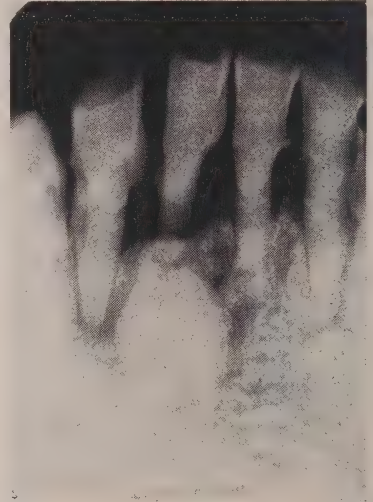


Fig. 4

Diagnostic différentiel:

En tenant compte de ces remarques, il y a plusieurs maladies locales et organiques susceptibles, dans certains cas, de simuler l'élaboration des "cémentomes".

1. Pathologie périapicale.

On utilise ici l'expression "pathologie périapicale" pour dénoter une maladie périapicale ordinairement causée par une dent morte ou dent dévitalisée; i.e. un abcès ou un granulome périapical ou un kyste radiculaire. Les critères utilisés pour le diagnostic d'une pathologie périapicale sont ordinairement les caries comprenant la pulpe, les dents décolorées, une pulpe dévitalisée, une évidence radiologique de destruction d'os périapical, de la membrane périapicale, et lamina dura avec

ou sans résorption de l'apex de la dent. D'autres critères moins évidents sont la fracture de la couronne, l'inflammation édémateuse de la région périapicale, l'enflure, l'apparition de fistules, douleur et la sensibilité de la dent. *Tous ces symptômes sont en contradiction avec les fibro-ostéomes périapicaux, où on trouve des dents vivantes, de teinte normale et sans carie.*

2. Endostoses, ossification concentrique, ostéite condensante, ostéosclérose.

Ces termes sont utilisés pour désigner différentes choses, souvent synonymes; ils signifient et désignent une hypercalcification osseuse de la mâchoire. La plupart du temps, ces hypercalcifications sont placées au centre et n'ont pas de relation de lieu ou d'étiologie avec les racines des dents. Parfois, il y a hypercalcification à l'apex de la racine d'une dent non vivante; on donne alors le nom d'ostéite condensée à cette lésion; i.e. la réaction de la nature à une infection chronique d'une pulpe malade.

3. Fibro-ostéome central, ostéo-fibrome ostéome-ostéoïde et dysplasie fibreuse.

Ces lésions sont groupées ensemble parce que leur aspect clinique et radiographique est semblable. En effet, on pourrait dire qu'elles ont des relations intimes entre elles et qu'elles pourraient être groupées dans la classe des dysplasies fibreuses localisées. En se servant du terme dysplasie fibreuse pour désigner la lésion ci-haut mentionnée, on peut dire que sa caractéristique particulière est d'être localisée au centre, tandis que les fibro-ostéomes périapicaux ne le sont pas. D'une façon générale—mais pas constante—cette lésion se distingue aussi par le fait qu'elle soulève la couche corticale de l'os de la région intéressée. Un autre critère différentiel de diagnostic, quoique n'étant pas toujours présent, est l'absence complète de calcification ou d'hypercalcification de la lésion en tout temps; donc là encore elle diffère

du fibro-ostéome périapical. Les dysplasies fibreuses, d'un autre côté ressemble au fibro-ostéome périapical par le fait que la formule bio-chimique du sang est, elle aussi, toujours négative.

4. Cémenticles et hypercémentose:

Plus haut, on mentionne les cémenticles et certains auteurs nomment ainsi les fibro-ostéomes périapicaux. Ce sont ordinairement de petites masses sphériques calcifiées localisées entièrement dans la membrane périodontaire et qui parfois s'étendent légèrement dans l'os alvéolaire voisin. On peut trouver les cémenticles dans n'importe quelle région de la membrane périodontaire, tandis que les "cémentomes", en grande majorité, sont localisés à l'apex des dents.

L'hypercémentose est une hyperplasie du ciment, qui est toujours radiopaque et toujours comprise dans la membrane périodontaire; le fibro-ostéome périapical est au contraire à l'extérieur de la membrane périodontaire.

5. Ostéome.

On peut confondre l'ostéome simple et spécifique avec le fibro-ostéome périapical à son troisième stage, mais certainement pas à ses premier et deuxième stages, car alors il subit différents degrés de radiotranslucidité.

L'ostéome est ordinairement localisé au centre de l'os et il est une tumeur qui grossit graduellement et cause une déformation ou du moins une asymétrie du visage ou des mâchoires.

6. Hyperparathyroïdisme.

Les cas sont rares où l'hyperparathyroïdisme peut influencer l'os de la mâchoire et s'apparenter au fibro-ostéome périapical, à son stage initial. L'examen radiographique des os du corps révèle d'autres lésions identiques d'hyperparathyroïdisme. La formule biochimique du sang établit que le calcium du sérum et les phosphatases alcalines sont élevés, mais que le phosphore du sérum est diminué.

7. La maladie de Paget.

On peut dire que la maladie de Paget ressemble aux fibro-ostéomes périapicaux multiples. Un examen aux rayons-X des autres os révèle là aussi d'autres lésions identiques. L'étude de la chimie du sang dans la maladie de Paget montre que le calcium et le phosphore du sérum sont normaux mais que les phosphatases alcalines du sérum sont élevées.

Histogénèse.

L'examen histologique du fibro-ostéome périapical à son premier stage montre une extension direct des fibres de la membrane périodentaire dans la lésion périapicale. Il est donc évident, que le fibro-ostéome périapical résulte de la prolifération du tissu conjonctif de la membrane qui s'étend vers le bas et sur les côtés, englobant l'apex de la dent. Au début de l'activité cellulaire de la membrane périodentaire, la prolifération détruit la lamina dura qui se résorbe. Cette prolifération envahit l'os spongieux voisin; celui-ci se résorbe et est remplacé par du tissu conjonctif fibreux cellulaire.

Histologie

Les trois stages dans le développement du fibro-ostéome périapical présentent des traits histologiques différents.

Le premier stage est caractérisé par la présence de fibres collagènes denses, d'un grand nombre de jeunes fibroblastes et quelques vaisseaux sanguins. L'accroissement à ce stage est strictement fibreux. On peut l'appeler la phase fibreuse du fibro-ostéome périapical.

Le deuxième stage est différencié par la formation de cellules osseuses à différents endroits qui se calcifient dans une matrice de tissus conjonctifs. Autour de ces îlots osseux, on trouve des rangées d'ostéoides et d'ostéoblastes; ces derniers sont le résultat de la métamorphose des fibroblastes en cellules ostéo-génératrices. Au deuxième stage, on retrouve encore des fibroblastes et des couches compactes de tissus conjonctifs collagènes.

Au troisième stage, on assiste à la continuation de l'évolution du deuxième stage, c. à. d., la déposition de substance osseuse. Ce stage final ressemble à une mosaïque d'os nouveau entouré de tissu conjonctif fibreux, disposé en forme d'espaces de moëlle. On peut encore apercevoir des reliefs et les bords du fibrome initial, mais, à toute fin pratique, les caractères histologiques de ce stage sont ceux d'un ostéome.

Suite de l'article à la page 9

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TABLEAU

	nôtres	Stafne (4)	Stafne (5)	Bernier et Thompson (26)	Scannell (25)
Nombre de cas observés.....	228	35	65	15	19
Âges: Ecart.....	20-68	—	20-62	—	20-61
Moyenne.....	38.2	43	42.5	37.2	39
Sexes: Hommes.....	14	10	19	7	3
Femmes.....	214	25	46	8	16
Races: Noire.....	171	—	—	5	—
Blanche.....	53	—	—	10	—
Jaune.....	4	—	—	—	—
Etat matrimonial: Marié.....	193	—	—	—	15
Célibataire.....	35	—	—	—	4
Grossesse: Positive.....	142	—	—	—	—
Négative.....	41	—	—	—	—
Lésions: Multiple.....	154	—	—	2	5
Simple.....	74	—	—	—	14
Endroit: Maxillaire (région antérieure).....	36	6	7	1	2
Maxillaire (région postérieure).....	29	—	—	—	3
Mandibule (région antérieure).....	540	69	109	10	12
Mandibule (région postérieure).....	127	3	14	12	13
Nombre de dents situées au voisinage.....	732	78	130	23	30
Stages: I.....	114	—	—	—	7
II.....	122	—	—	—	—
III.....	47	—	—	—	12
Proportion du maxillaire: mandibule.....	1-10.3	1-17	1-17	1-23	1-5
Syphilis: Positif.....	27	—	—	—	—
Négatif.....	197	—	—	—	—
Douteux.....	4	—	—	—	—
Traumatisme: Positif.....	20	—	—	—	—
Négatif.....	208	—	—	—	—
Caries ou obturations: Positif.....	21	—	—	—	—
Négatif.....	207	—	—	—	—

Analyse des Statistiques (voir tableau)

Âges: Les âges variaient de 20 à 68, avec une moyenne de 38.2% au temps de la découverte de la lésion.

Sexe: Le nombre de femmes était beaucoup plus grand que le nombre d'hommes. Dans notre groupe de patients souffrant d'un fibro-ostéome périapical, 214 étaient des femmes et 14 des hommes, ou 93.9% de femmes.

Race: Sur 224 patients, 171 ou 76.4% étaient noirs, 53 ou 23.6% étaient blancs. Les autres, 4 patients étaient des jaunes.

Lésions: Il n'y avait que 74 patients, ou 32.5%, qui présentaient un seul fibro-ostéome périapical. Les 154 autres avaient deux ou plusieurs lésions. Dans notre groupe, 732 dents étaient touchées par les fibro-ostéomes périapicaux.

Endroit: 465 ou 63.5% des 732 dents ont été trouvées dans la région des

incisives inférieures. La mandibule renfermait 91.2% de tous les cas; représentant un rapport de plus de 10.1 sur le maxillaire.

Stages: Les stages ont été estimés au point de vue radiologique seulement. On a déduit qu'il y avait 114 lésions dans le premier stage, 122 dans le deuxième stage et 47, dans le stage final. Il est à observer que sur 52 patients, plus d'un stage a été trouvé concurremment.

Maladies constitutionnelles: 27 ou environ 12% des patients nous ont confié qu'ils avaient la syphilis ou l'avaient déjà eu. 197 patients en avaient aucune trace et quatre des histoires de cas étaient douteuses.

54 des 228 patients souffrant de fibro-ostéome périapical n'avaient pas, apparemment, de maladies constitutionnelles. Les autres 174 patients nous firent part d'avoir souffert ou de

souffrir de maladies se classant des maladies de l'enfance jusqu'aux troubles cardio-vasculaires. Ces maladies étaient les suivantes:

Histoire de cas négative—54	Allergie—7	T.B.—1
Maladies d'enfance —62	Dist. utérine—6	Jaunisse—1
Fibrome de l'utérus—30	Diabète—6	Grippe—1
Syphilis—27	Ménopause—5	Leucémie—1
Hystérectomie—16	Anémie—4	Eczéma—1
Arthrite—15	Hémorroïdes—4	Eclampsie—1
Typhoïde—12	Hernie—3	Stérilité—1
Sinusite—9	Ca.—3	Diphtérie—1
Pneumonie—8	Asthme	Prostate—1
Cardio-vasc.—7	Cystite—3	Ulcère gastrique—1
Malaria—7	Dermato.—2	Ostéite fibrosée.
Dist. ovarienne—7	Hyperthyroïdie—2	

Carie, obturations et traumatisme:

Seulement 21 ou 9% des 228 patients avaient des caries ou des obturations sur les dents adjacentes aux fibro-ostéomes périapicaux. L'histoire positive ou la constatation de traumatisme n'a été révélée que sur 20 patients, ou moins de 9% de nos cas.

Discussion

Âges: Il est intéressant de noter la différence d'âge qui existait chez notre groupe de 228 patients. Le plus jeune avec un fibro-ostéome périapical avait 20 ans et le plus vieux 68. Cette constatation se compare favorablement avec celle de Stafne (5), 65 cas et celle de Scannell (25), 19 cas, où les âges variaient de 20-62 et 20-61, respectivement. L'âge minimum de 20 ans, peut donc jouer un grand rôle au point de vue diagnostique et étiologique. Il est aussi probable qu'on puisse trouver des fibro-ostéomes périapicaux chez des personnes en bas de 20 et on serait porté à croire que ces lésions répondent à un facteur d'ordre général plutôt qu'à un stimulus local.

Notre moyenne d'âge de 38.2 années se compare bien avec celle trouvée par les autres (4), (5), (26) et (25), où la moyenne était 43, 42.5, 37.2 et 39. Quoique ces chiffres donnent certains indices, il ne faut pas y attacher trop d'importance parce que le fibro-

ostéome est une lésion qui se développe très lentement et qu'il existe déjà plusieurs années avant et après la découverte de ces lésions.

Sexe: Le nombre considérable de fibro-ostéomes périapicaux chez les femmes est de grande importance au point de vue diagnostique et sans doute au point de vue étiologique. Lorsqu'on réalise que 93.9% de 228 cas, ou 214, sont des femmes et que le rapport des femmes aux hommes est plus de 15:1, on peut sans doute y tirer certaines conclusions préliminaires. En se basant sur les données ci-haut, on peut dire, par exemple, que les fibro-ostéomes périapicaux sont essentiellement une anomalie chez les femmes. Des recherches se font continuellement sur ces données pour déterminer le rôle des hormones chez la femme, surtout dans l'étiologie des "cémentomes". Le fait qu'on ait découvert seulement 14 hommes qui souffraient de fibro-ostéomes périapicaux, n'élimine pas la possibilité des influences étiologiques des hormones sexuelles chez la femme. Même si les hommes dans notre groupe n'ont pas été examinés complètement au point de vue endocrinien, nous croyons qu'eux aussi ont subi l'influence des hormones sexuelles féminines.

Race: Une autre révélation de notre enquête semble avoir beaucoup d'importance. C'est la grande diversité en nombre qu'il y a entre les négresses et les blanches. Des 224 patients, 161 ou 76.4% étaient noirs; soit un rapport de 3:1, comparé aux blancs. Cette proportion n'est cependant pas vraiment juste puisque les dossiers de notre clinique dentaire (source de nos patients) révèlent que 63% des patients sont des blancs et 37% des noirs, donnant un rapport de fibro-ostéomes périapicaux entre les noirs et les blancs d'environ 6:1. 4 cas de fibro-ostéomes périapicaux ont été trouvés chez des individus de la race jaune. La raison d'être de la fréquence

plus accentuée de ces lésions chez les noirs demeure un problème pour les chercheurs.

Lésion. Il est à remarquer que la plupart des "cémentomes" sont multiples; i.e., 67.5%, à comparer à 32.5% qui n'ont qu'une seule lésion et couvrant en moyenne 3.2 dents par personnes. Ce grand nombre des lésions multiples et la moyenne de 3.2 dents en relation avec elles, donne plus d'importance à l'étiologie organique plutôt qu'aux traumatismes ou aux facteurs locaux d'irritation.

Endroit: L'endroit où se logent les "cémentomes" mérite aussi d'être noté. 465 (63.5%) des 732 dents ont été trouvées dans la région des incisives inférieures. Dans 91.2% des cas, la mandibule y était intéressée, donnant un rapport mandibule sur maxillaire de plus de 10:1. Ces observations nous fournissent des sujets pour réfléchir et étudier.

Stages. Lorsqu'on étudie et que l'on considère les différents stages des fibro-ostéomes périapicaux, on est frappé par le petit nombre qu'on y trouve dans le troisième stage à comparer aux deux premiers. Une explication de cet état de choses pourrait être la durée considérable des premier et deuxième stages. Autant que possible, des patients ont été suivis et examinés périodiquement aux rayons-x. Ainsi, plusieurs années pouvaient s'écouler avant que les fibro-ostéomes périapicaux passent du premier au troisième stage. Dans un cas, il ne fallut pas moins de 25 années avant de conclure que la lésion avait atteint le troisième stage. Il faut admettre qu'il est difficile de juger des différents stages seulement par radiographie. Cependant on peut dire avec certitude que le fibro-ostéome périapical se développe très lentement.

Maladies constitutionnelles: Quand on considère les statistiques des maladies constitutionnelles décelées chez nos 228 patients, notre attention est

attirée du fait qu'il y a un manque de rapport entre les maladies organiques courantes et les "cémentomes". Ces renseignements ne nous permettent pas de tirer des conclusions. On peut dire seulement qu'il ne semble pas y avoir de rapport entre ces deux facteurs. On a tenté d'établir des histoires de cas complètes de chaque patient, mais ce fut peine perdue. Peut-être des recherches plus poussées dans cette direction donneront-elles des renseignements plus solides et plus définitifs.

Caries, obturations et traumatisme:

On ne put établir de relation certaine entre les caries et les obturations présentes dans les dents avec les fibro-ostéomes périapicaux. Seulement 21 des 228 patients montraient des caries ou des obturations sur les dents voisines de ces lésions. Il en fut de même pour les traumatismes; 20 patients ou moins de 9% de notre groupe présentaient des fibro-ostéomes périapicaux avec histoires de traumatisme de toutes natures exercés sur les dents. On peut dire que le traumatisme joue un très petit rôle, s'il en joue un, dans l'étiologie des "cémentomes".

Traitement. Comme les fibro-ostéomes périapicaux ne manifestent aucun symptômes, qu'ils sont inoffensifs, qu'il se développent très lentement, qu'ils sont délimités et qu'ils guérissent seuls, on ne conseille pas d'intervenir. A notre connaissance, on a jamais rapporté, ni observé de fibro-ostéomes périapicaux qui occasionnaient des troubles locaux, causant des modifications de la pulpe, ou sa mortification. Lorsqu'on identifie une tumeur de ce genre, on doit se convaincre de son état inoffensif. Un petit nombre atteint des proportions qui amènent une asymétrie des mâchoires. Cette dernière raison pourrait être la seule militant en faveur d'une intervention chirurgicale pour rétablir la fonction et l'esthétique.

Résumé

1. Le fibro-ostéome périapical ou "cémentome" est une entité définie par elle-même, au point de vue clinique, radiologique et histologique et se différencie des autres lésions semblables, telles que, pathologie périapicale, endostose, ossification concentrique, ostéite condensante, ostéosclérose, fibro-ostéome central fibro-ostéome, ostéome-ostéoïde, dysplasie fibreuse, cémenticles, hypercémentose, ostéome, hyperparathyroïdisme et maladie de Paget.

2. On trouve les fibro-ostéomes périapicaux plus fréquemment chez les femmes que chez les hommes (15:1). On les trouve aussi plus souvent chez les noires que chez les blanches, dans un rapport de 6:1.

3. La carie, les obturations et le traumatisme ne jouent aucun rôle dans l'étiologie.

4. Pour le moment, on ne peut associer les maladies constitutionnelles et la syphilis aux fibro-ostéomes périapicaux.

5. Parce que le fibro-ostéome périapical est souvent multiple, on est porté à croire qu'il est d'origine organique.

6. La chirurgie ne doit pas intervenir, puisque les "cémentomes" n'ont aucun symptôme, se développent lentement, sont limités et guérissent spontanément.

BIBLIOGRAPHIE

- (1) Brophy, T. W.—Textbook of Oral Surgery, Blakiston's & Son & Co., Phila. 1918.
- (2) Thoma, K. H.—Cementoblastoma, *Int. J. Ortho* 23:1127, 1937.
- (3) McCall, O. & Wald, S.—*Clinic. Dent. Roent., W. B. Saunders Co., Phila., 1940. p. 187.*
- (4) Stafne, E. C.—Cementoma: A Study of 35 Cases, *Dent. Surv.* 9:27, 1933.
- (5) Stafne, E. C.—Periapical Osteo-Fibrosis with Formation of Cementoma, *J.A.D.A.* 21:1822, 1934.
- (6) Stafne, E. C.—Periapical Fibromas: Roentg. Observ. *J.A.D.A.*, 30:688, 1943.
- (7) Thompson, H. C.—Cementomas: Their Location, Diagnosis and Treatment, *Dent. Stud. Mag.*, May 1945.
- (8) Miller, S. C.—Oral Diagnosis and Treatment, The Blakiston Co., Phila., 1946 (2nd Ed.) p. 293.
- (9) Dewey, K. W.—Case of Genuine Cementoma, *J.A.D.A.* 20:52, 1931.
- (10) Bernier, J. L.—Odontogenic Tumors, N.Y. State Dent. J., 13:560, 1947.
- (11) Thoma, K. H., Cascario, M. & Braccivicz, F. J.—Cementoma *Am. J. Ortho. and Oral Surg.* 30:657, 1944.
- (12) Zegarelli, E. V. & Ziskin, D. E.—Cementomas: A Report of 50 Cases, *Am. J. Ortho. & Oral Surg.* 29:285, 1943.
- (13) Demaree, E. W.—Cysts and Tumors of the Jaws—*Calif. Medicine*, Vol. 70, No. 1—1949.
- (14) Grant, G. E. & Hendrick, J. W.—Tumors of Head & Neck, The Williams & Wilkins Co., Baltimore, 1950, p. 3.
- (15) Ennis, L. M.—Dental Roentgenology—Lea and Febeger Co., Phila., 1949, p. 368.
- (16) Ewing, E.—Neoplastic Diseases, Saunders Co., Phila., 1940, (4th Ed.) p. 229.
- (17) Glickman, J.—Fibrous Dysplasia in Alveolar Bone—*Oral Surg., Oral Med., & Oral Pathol.*, 1:895, 1948.
- (18) Pancoast, H. K. & Pendergrass, E. P. & Schaeffer, J. P.—The Head & Neck in Roentgen Diagnosis, Thomas Co., 1942, p. 307.
- (19) Zegarelli, E. V.—Communication personnelle.
- (20) Colyer, J. F.—*Dent. Surg. and Pathol.*, 1910.
- (21) Dewey, K. W.—Normal and Pathologic Cementum Formation, *Dent. Cos.*, 68:583, 1926.
- (22) Widdowson, E. V. and Widdowson, T. W.—Dental Surg. & Path., Staples Press, London, 1950, (4th Ed.) p. 583.
- (23) Stafne, E. C. — Roentg. and Diag. of Periapical Osteoma and Cementoma, *J. Ohio Dental Soc.*, 9:170, 1935.
- (24) Bradley, J. L.—Multiple Cementomas, *J. Oral Surg.*, 2:278, 1944.
- (25) Scannell, J. M.—Cementoma, *Oral Surg., Oral Med., & Oral Pathol.*, 2:169, 1949.
- (26) Bernier, J. L. & Thompson, H. C.—The Histogenesis of a Cementoma, *Am. J. Ortho. & Oral Surg.*, 32:543, 1946.
- (27) Thoma, K. H.—Oral and Dental Diagnosis, W. B. Saunders Co., Phila., 1949, (3rd Ed.), p.446.
- (28) Bland-Sutton—Tumors Innocent and Malignant, London, 1922 (Ed. 7th).
- (29) Bodner, H. and Bodner, B. N.—Radicular Cementoma—*Am. J. Ortho. and Oral Surg.* 33:842, 1947.
- (30) Letkowitz, W.—The Formation of Cementum, *A. J. Ortho. and Oral Surg.* 30:224, 1944.
- (31) Cahn, L.—Pathology of Oral Cavity, The William and Wilkins Co., Balt., 1941, p. 100.
- (32) Kronfeld, R.—Histopathology of the Teeth and Their Surrounding Structures, Lea and Febeger Co., Phila., 1933, p. 217.
- (33) Gottlieb, B. — Zementostosen, Schmelztropfen und Epithelneester, *Ztschr. f. Stom.* 19:565, 1921.
- (34) Orban, B.—Oral Histology and Embryology, Mosby Co., St. Louis, 1949, (2nd Ed.), p. 217.
- (35) Mikola, O. J. and Bauer, W. H.—Cementicles and Fragments of Cementum in the Periodontal Membrane, *O. Surg. Oral Med., & Oral Pathol.*, 2:1062, 1949.
- (36) Bauer, W. H.—Ueber Zementikel und Zementkettaliche f. *Zalmlh* 45:345-371, 1929.
- (37) Thoma, K. H.—Oral Diagnosis with Suggestion for Treatment, W. B. Saunders Co., Phila., 1943.

BUREAU NATIONAL D'EXAMEN DENTAIRE

CEDULE DES EXAMENS

Lundi, le 14 juin

Pour l'ouest de Brandon	9.00 h. a.m.	Dentisterie opératoire
Pour l'est de Brandon	10.00 h. a.m.	" "
Pour l'ouest de Brandon	1.30 h. p.m.	Chirurgie, anesthésie, pathologie
Pour l'est de Brandon	2.30 h. p.m.	" "

Mardi, le 15 juin

Pour l'ouest de Brandon	9.00 h. a.m.	Prothèse
Pour l'est de Brandon	10.00 h. p.m.	" "
Pour l'ouest de Brandon	1.30 h. p.m.	Etiquette, jurisprudence, déontologie
Pour l'est de Brandon	2.30 h. p.m.	" "

Mercredi, le 16 juin

Pour l'ouest de Brandon	9.00 h. a.m.	Dentisterie préventive
Pour l'est de Brandon	10.00 h. a.m.	" "
Pour l'ouest de Brandon	1.30 h. p.m.	Médecine buccale
Pour l'est de Brandon	2.30 h. p.m.	" "

Jeudi, le 17 juin

Pour l'ouest de Brandon	9.00 h. a.m.	Deux demi-heures d'examens oraux
Pour l'est de Brandon	10.00 h. a.m.	avec une "demi-heure" d'intervalle

Les candidats admis aux examens seront avertis personnellement de l'endroit où ils devront se rendre pour les examens.

Le Bureau national d'Examen dentaire octroie des certificats aux candidats heureux dont la compétence est reconnue dans une ou dans toutes les provinces, par le Bureau provincial concerné; ces certificats permettent d'obtenir une licence pour exercer dans une province en particulier.

Pour être admis à l'examen annuel,

il faut remplir une formule officielle et la faire parvenir au secrétaire du Bureau national d'Examen dentaire au plus tard le 15 avril. On peut se procurer des formules d'application en s'adressant au secrétaire. Il faut adresser toute la correspondance destinée au B.N.E.D. au:

Docteur H. N. Beach, secrétaire,
Bureau national d'Examen dentaire,
150, rue Metcalfe,
Ottawa, Canada.

Bureau national d'Examen dentaire du Canada

Règlements concernant les candidats

- 1) Le Bureau national d'Examen dentaire du Canada octroie des certificats aux candidats, qui réussissent ses examens; la compétence de ces candidats doit être reconnue dans une ou dans toutes les provinces par le Bureau provincial concerné; ces certificats permettent d'obtenir une licence pour exercer dans une province en particulier.
- 2) Les candidats doivent avoir les qualifications suivantes:
 - a) être citoyen canadien;
 - b) être en mesure de produire une preuve d'avoir satisfait aux exigences établies par le Conseil d'Enseignement dentaire de

l'Association dentaire canadienne, avant d'avoir commencé ses études dentaires proprement dites;

- c) avoir complété au moins deux années académiques équivalentes à deux années d'arts et sciences dans une université reconnue;
- d) avoir complété avec succès quatre années académiques d'études professionnelles dans une faculté dentaire reconnue par le Conseil d'Enseignement dentaire de l'Association dentaire canadienne;
- e) posséder un diplôme de dentiste

- d'une faculté dentaire approuvée par le Conseil d'Enseignement dentaire de l'Association dentaire canadienne;
- f) avoir reçu d'un organisme autorisé au Canada une licence, qui donne le droit d'exercer.
- 3) Les épreuves consisteront en des examens écrits (en anglais ou en français) sur les sujets suivants:
- a) dentisterie opératoire
- b) prothèse dentisterie préventive (comprenant tout ce qui a trait à la pédodontie) chirurgie buccale, anesthésie et pathologie médecine buccale (comprenant périodontie et endodontie) étiquette professionnelle, jurisprudence et déontologie
- b) Examens oraux (sur l'application clinique des sciences de base)
- 4) Ou remettra aux candidats les cahiers d'examens seulement au moment des examens; les candidats devront fournir leur plume et leur encre.
- 5) Les règlements suivants s'appliquent aux examens:
- a) Pour réussir, le candidat devra conserver 60% des points sur chaque matière;
- b) les examens oraux consisteront en deux périodes d'une demi-heure chacune; ces examens oraux auront lieu dans des facultés, avant ou après les examens écrits;
- c) les corrections seront faites d'une façon anonyme;
- d) les candidats, qui n'obtiendront pas le pourcentage requis sur une matière, pourront reprendre cette matière une seule fois au cours d'un examen régulier; sinon, ils devront reprendre toute la série d'examens pour se qualifier;
- e) les candidats qui échouent plus d'une matière devront reprendre toute la série d'examens pour se qualifier;
- f) les candidats, qui n'échoueront pas plus d'une matière écrite en obtenant une note de 50% ou plus, pourront faire reviser leur copie par trois examinateurs dont la décision sera finale.
- 6) Chaque année, il y aura une série d'examens à une date fixée peu après la fin des examens dans les facultés dentaires canadiennes. Le Bureau peut cependant fixer une séance spéciale d'examens à l'automne. Les déboursés pour ces examens seront défrayés par le ou les candidats. La date des examens sera annoncée trois mois à l'avance.
- 7) Les honoraires d'examens sont de \$125.00; un chèque certifié ou un mandat doit être joint à la formule d'application. On peut s'enquérir auprès du secrétaire du montant des déboursés pour un examen spécial.
- 8) Si au cours d'un examen, un candidat se rend coupable d'un manquement aux règlements, l'examineur en charge enlèvera au candidat son cahier ou toute autre pièce à conviction; il donnera un nouveau cahier au candidat et lui permettra de continuer son examen jusqu'à la fin de la série; à la fin de la série d'examens, l'examineur fera un rapport de l'incident au secrétaire, en en décrivant toutes les circonstances et en lui faisant parvenir toutes les pièces à conviction.
- 9) Il faut faire parvenir au secrétaire du Bureau national dentaire, au plus tard le 15 avril, la formule d'application dûment remplie pour être accepté à l'examen annuel. On peut se procurer des formules d'application au secrétariat des faculté ou en écrivant au secrétaire. Toute la correspondance au sujet du B.N.E.D. doit être adressée au: Docteur H. N. B. Beach, secrétaire, Bureau national d'Examen dentaire, 150 rue Metcalfe, Ottawa, Ontario, Canada.

Journal

OF THE CANADIAN DENTAL ASSOCIATION

Some basic requirements of successful root canal therapy

by F. D. OSTRANDER, D.D.S., M.S.

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In the past, blanket condemnations of all forms of root canal therapy have frequently been seen in the literature and even yet today one finds that in certain areas of the country the "dead" tooth is held more or less in disrepute. Fortunately, however, an increasing number of dentists and physicians are beginning to realize that there is nothing wrong with the pulpless tooth per se, but that even as there are good and bad inlays, bridges and dentures, there are also good and bad root canal cases. We believe that this changing attitude is largely due to the fact that out of investigations carried on during the past two decades has come a new, scientifically controlled system of root canal therapy which merits and receives the respect of a large segment of both the dental and medical professions. Furthermore an increasing number of the dental schools are establishing endo-

dontic departments and are teaching sound systems of root canal therapy.

Undoubtedly some of the root canal therapy which has been practised in the past deserved the condemnation which it received for it was very poorly done. On the other hand if certain basic requirements are adhered to, it has now become abundantly clear that successful root canal cases can be turned out just as routinely as the dentist can produce successful inlays, crowns or bridges. It is these basic requirements of successful root canal therapy which will be discussed in this paper, rather than the details of any one technique.

DIAGNOSIS

The first major requirement for the successful practice of endodontics is an accurate diagnosis of each case before it is started. It is our candid opinion that many root canal cases fail because the dentist does not spend the time to make an accurate appraisal of the case before it is started. While a large percentage of pulp-involved teeth can be successfully treated, by no means all such teeth are

(Presented before the Western Canada Dental Association, Jasper, Alberta, June 15, 1953).

candidates for endodontic procedures. Nothing can be more discouraging than to start a root canal case that should have been classed as inoperable only to find later that it must be extracted after the expenditure of much time and effort. Such instances can be almost entirely eliminated by proper diagnosis.

An absolute must in the diagnosis of any prospective root canal case is a good periapical x-ray. If the first exposure is not entirely clear then additional films should be taken at different angles until the root canal morphology and periapical area are clearly defined. In addition, in nearly all instances a good full mouth x-ray should be available.

In deciding whether to attempt any given root canal case the first consideration should be whether the tooth is strategically important enough to merit the expenditure of time and money necessary to save it. For example very little will be gained by doing a root canal case in a mouth in which caries is rampant unless caries control measures are instituted. Likewise the saving of a single pulp-involved tooth in a mouth with extensive periodontal disease will accomplish little if the supporting tissues cannot be returned to a healthy state. On the other hand pulp-involved teeth can be of the greatest strategic value. The ability to save a single tooth may mean the difference between fixed bridgework or an extensive partial denture or if the tooth is already an abutment it may mean the retaining of an extensive partial or fixed bridge.

When it has been decided that the tooth in question is of sufficient importance to merit root canal therapy it must next be determined whether the particular tooth is anatomically operable. This involves a careful study of the x-ray to determine whether excessive calcification, extremely curved canals, multiple or inaccessible canals or other obstructions will prevent obtaining a hermetical seal of the pulp canal to the apex. This phase of the study should also include a careful study of pos-

sible periapical involvements, their extent, whether the prognosis for response to conservative treatment is good and, if not, whether periapical curettage or resection is possible. In general periapical surgery is not possible posterior to the maxillary or mandibular first bicuspid because of the proximity of important anatomical structures which would be involved. Sometimes an extra large maxillary antrum or a mesially placed mental foramen will contra-indicate periapical surgery posterior to the cuspid.

Before starting any given root canal case the condition of the pulps in approximating teeth should be carefully considered. This is particularly important where blows have caused pulp death in anterior teeth. Frequently the vitality of more than one pulp is destroyed and x-ray evidence is not always present for many months or even years after pulp degeneration. For this reason it is often of the greatest importance to have an accurate pulp tester available. In our hands testers which use the short wave high frequency principle of stimulation as represented by the Burton Vitalometer have

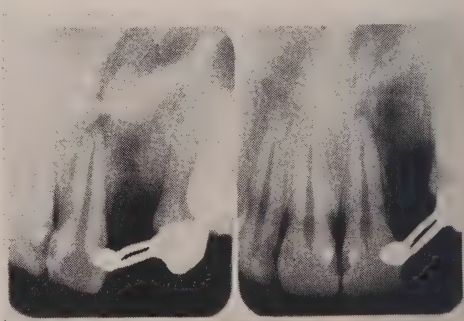


FIG 1.

Failure of a periapical area to regenerate due to loss of vitality in adjacent central. Approximately one year prior to these X-rays the maxillary right lateral had been filled and resected. A fistula persisted and a second curettment was done. The fistula still persisted and the lateral was extracted. The fistula still did not heal and the patient was referred to the University of Michigan Dental Clinic. Vitality tests showed the right central to be pulpless and the source of the persistent infection.

proved more accurate than the old electric testers. If pulp involvements are not detected in approximating teeth they may cause failure of periapical areas to regenerate. (Fig. 1.)

A third phase of diagnosis should consist of a general survey of the patient's health. The recent work of Freyberg¹, Hench and co-workers^{2,3,4}, and many other investigators⁵ has largely refuted the once highly regarded theory that root canal and periapical infections are frequently an etiologic factor for rheumatoid arthritis, rheumatic fever and a host of other systemic ailments. However the dentist contemplating root canal therapy in a patient's mouth should certainly be familiar with his general health picture and should questionable factors appear in his history, the dentist can often do the patient a real service by referring him to qualified medical personnel for final diagnosis and treatment. Patients suffering from debilitating diseases are not good risks for extensive endodontic procedures for the same reasons that they are not good risks for any other forms of surgical procedures.

CONTROL OF ROOT CANAL AND PERIAPICAL INFECTIONS

The second major requirement for successful root canal therapy is the elimination of all infection from the root canals and periapical areas. While there are several methods by which pathogenic organisms in or around the tooth may be destroyed there is only one method by which the dentist can be sure that such infection is eliminated. This method consists of the use of an absolutely aseptic technique and bacteriologic cultures of the canals and periapical areas. Grossman⁶ rather clearly showed the necessity for cultures when he enlisted the aid of a number of dentists who treated root canal cases until, on the basis of clinical observation, they believed the cases to be ready for filling. Cultures were then taken and of the 150 cases managed in this way only 58 per cent were found

sterile, the remaining 42 per cent giving positive cultures. Had this 42 per cent been filled without cultures, pathogenic organisms would have been sealed in with great danger of an early acute infection or a continuing chronic infection.

One still occasionally hears or reads statements to the effect that cultures may be necessary where a pulp has been completely degenerated, but in the case of nonpainful vital exposures it is satisfactory to simply wash the pulp chambers and canals with an antiseptic solution and fill them at the time of pulp extirpation. In order to check the validity of such claims the author and associates⁷ checked a total of 632 cases of vital pulp-involved teeth which were divided into groups as follows: 1) those with no history of pain; 2) those giving a history of mild pain; and 3) those giving a history of severe pain. The data obtained are presented in Table 1.

TABLE 1
Relation of bacteriology and treatments
to pain preceding pulpectomy

Cases with a history of:	No Pain	Mild Pain	Severe Pain
Not infected.....	144 (50.1%)	96 (47.5%)	64 (44.7%)
Infected.....	143 (49.9%)	106 (52.5%)	79 (55.3%)
Treatment.....	Cases becoming sterile		
One.....	104 (72.7%)	69 (65.1%)	51 (65.4%)
Two.....	26 (18.1%)	23 (21.7%)	17 (21.5%)
Three.....	7 (4.9%)	10 (9.4%)	8 (10.1%)
Four.....	4 (2.7%)	1 (0.9%)	3 (3.7%)
Five.....	2 (1.4%)	3 (2.7%)	
Totals.....	143	106	79

It will be noted that even among those cases in which no pain had occurred, 49.9 per cent of them were infected. Even after a 48-hour drug treatment more than 27 per cent of these cases still remained infected and nearly 10 per cent were still infected after two 48-hour treatments. Obviously had these cases been filled immediately after pulp extirpation without cultures approximately 50 per cent of them would have still harbored pathogenic organisms and even after a 48-hour treatment 27 per cent of them would have been sealed with infecting

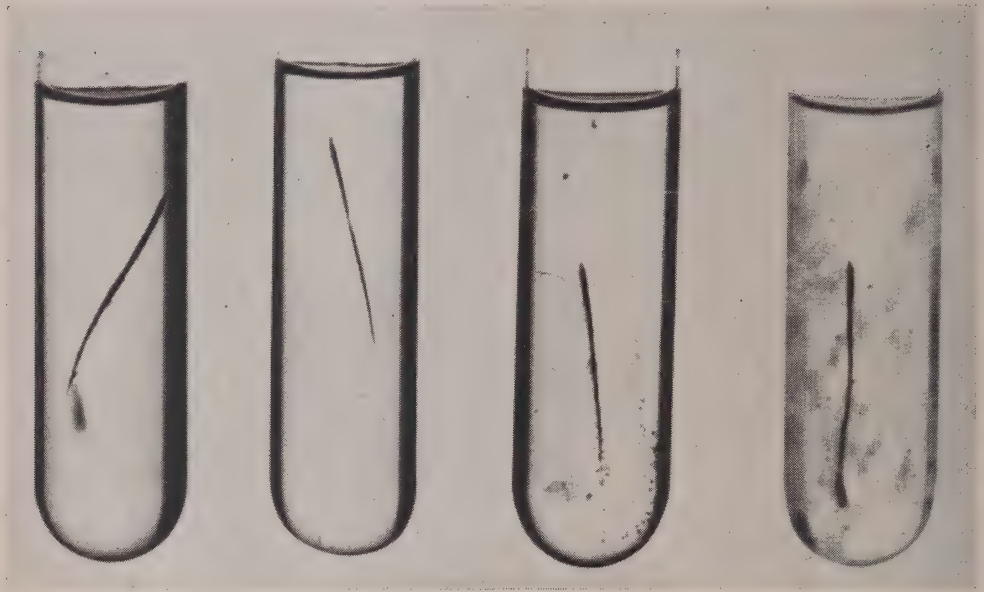


FIG. 2.

Four root canal cultures after 48 hours' incubation. The second tube from the left is clear, indicating the absence of infection, but the first, third and fourth tubes show varying degrees of growth, indicating that the teeth were infected.

organisms present. Additionally it will be noted that in those cases where there was history of mild and severe pain, the percentage of initially infected cases increased and it became slightly more difficult to produce sterility. We feel that these data establish first, the necessity for treatment of all root canal cases to eliminate any infecting organisms rather than filling immediately following pulpectomy and second, the necessity for bacteriologic control to determine when such infection is eliminated.

Some dentists have hesitated to adopt bacteriologic controls for root canal cases because they have felt that the time consumed by such a technique would prove prohibitive. Actually the time consumed in taking a culture, incubating it and determining the presence or absence of growth is negligible. The actual taking of a culture should not require over a minute or two. Immediately after taking the culture it is placed in a suitable in-

cubator and kept at body temperature for 48 hours. Whether or not the tooth is infected then can be determined by simply looking at the culture tube. If it is cloudy it indicates the presence of infection. A clear tube indicates no growth—the absence of infection (See Fig. 2). In most root canal cases one is not interested in what organism is present but merely whether infection is present or not.

Actually we feel that the use of culture technique in root canal procedures saves time. In the first place many pulp-involved teeth are not infected to start with. In Table 1 it will be noted that between 40 and 50 per cent of the cases were negative when cultured at the first treatment. In all probability such cases are frequently treated repeatedly when cultures are not taken, whereas they can be filled after the first two treatments when cultures are taken. It should be emphasized that even when periapical pathology is present by no means all cases

are infected. In Table 2 it will be noted that when pathology was present in 119 cases there were 38.6 per cent of the cases which were not infected. These data are significant not only in showing the potential time saving element involved in culture technique but they also emphasize the fact that one cannot diagnose infection radiographically. We have no right to tell a patient that a tooth is infected or abscessed simply because we see a radioluscent area about the apex. There is only one way in which one can be sure of the presence or absence of infection and that is through a bacteriologic culture.

TABLE 2
Periapical Pathology and Bacteriology

First Culture	No. Cases (Cases with Normal Periodontal Membrane)	Per cent
No Growth	232	47.6%
Growth	255	52.3%
	Total 487	
	(Cases With Periapical Pathology)	
No Growth	46	38.6%
Growth	73	61.3%
	Total 119	

In a further effort to determine the actual time expended when bacteriologic controls are utilized in root canal treatments, 759 cases which were treated in the University of Michigan Dental Clinic were tabulated. It will be seen (Table 3) that there were nearly 40 per cent of these cases which were not infected to start with and could be completed after the first two treatments. The average number of treatments required to obtain two negative cultures was 3.06. As an added check the author tabulated 138 cases from his own practice (Table 4) and found an average of 3.41 treatments to obtain negative cultures. While this figure checks closely with that from the clinic, the slightly increased average can be explained by the fact that only 26 per cent of the cases were negative at the start. This figure is unusually low, probably because of the fact that the cases were mostly referred cases from other offices and therefore tend to be of the more difficult type. At any rate it is our definite opinion that these figures indicate a

saving of time since an informal survey which we conducted some years ago indicated that many dentists who do not use cultures treat their root canal cases on an average of 5 to 7 times in the hope of eliminating all infection.

TABLE 3

® Treatments required to obtain two successive negative cultures in 759 root canal cases treated in the clinic of the University of Michigan, School of Dentistry.

Number of treatments	Cases completed	Per cent
Two.....	298	39.3
Three.....	281	37.0
Four.....	83	10.9
Five.....	47	6.2
Six.....	33	4.3
Seven.....	10	1.3
Seven plus.....	7	0.9
Totals.....	759	

Average number of treatments per case: 3.06

TABLE 4

Treatments required to obtain two successive negative cultures in 138 root canal cases treated in private practice.

Number of treatments	Cases completed	Per cent
Two.....	36	26.1
Three.....	51	36.9
Four.....	28	20.3
Five.....	11	7.9
Six.....	7	5.1
Seven.....	4	2.9
Nine.....	1	0.9
Totals.....	138	

Average number of treatments per case: 3.41

It is our belief that the above data not only establish that cultures provide a means of saving time in the treatment of root canal cases but also establish the desirability and necessity for the routine use of cultures if one is to be sure he is not sealing in pathogenic organisms when he fills a root canal case. It seems almost trite to state that in the University of Michigan Dental Clinic every root canal case which is filled must first have two successive negative bacteriologic cultures. These cultures are taken in situ under a strictly aseptic technique as previously described by Sommer and Crowley®.

Some dentists have felt in the past that cultures taken at or near the apex of the root do not necessarily mean that the periapical area is sterile. However a study carried out by Hedman at the University of Michigan, School of Dentistry

and later extended at the Naval Dental School at Bethesda, Maryland, has clearly shown that periapical areas of pathology are sterile when cultures taken from within the root canal are sterile⁹.

Still other dentists have delayed adopting bacteriologic controls because they believed that considerable expensive equipment would be necessary. Actually only a minimum of equipment is necessary. Suitable culture media is obtainable in sterile, hermetically sealed tubes from the Difco Laboratories of Detroit*. Their Glucose-Ascites Media is excellent for root canal cultures. In some instances it may be possible to have culture media made up in local bacteriology laboratories in hospitals or other institutions. A suitable formula for such a media is found in Accepted Dental Remedies. Suitable incubators are obtainable at relatively low cost from various sources and a microscope is not necessary since it is possible to determine the present or absence of infection by merely looking at the incubated culture.

Over the years many different drugs have been used for the treatment of root canal and periapical infections but it is our feeling that a drug chosen for this purpose should meet certain basic requirements. Table 5 outlines the requirements of what one might consider to be an ideal drug for root canal treatments.

TABLE 5	
Requirements of an Ideal Root Canal Antiseptic	
1.	Germicidal to all organisms
2.	Rapidly effective
3.	Capable of deep penetration
4.	Effective in presence of organic matter
5.	Non-injurious to periapical tissues
6.	Will not stain tooth structure
7.	Chemically stable
8.	Odourless and tasteless
9.	Economical

It should be stated immediately that no antiseptic entirely meets the requirements outlined above but in making our choice of antiseptic we should choose those which come most closely to these

requirements. I should like to elaborate a bit on certain of these requirements. Any antiseptic used in root canals should have a broad spectrum since many different organisms are found in root canal infections. The most frequently seen infections are the streptococci with the *Streptococcus viridans* and *Streptococcus anhemolyticus* groups predominating. Possibly 1 to 2 per cent of root canal infections are hemolytic streptococci while other frequently isolated organisms include actinomycetes, *Lactobacillus acidophilus*, monilia, staphylococci and other scattered groups. Thus it can be seen that to be really effective as a root canal antiseptic a drug must be effective against a wide range of organisms. Of course, the more rapidly effective a drug can be the more desirable it is, but there are definite limitations in this respect and none of them can be expected to be effective routinely when in only brief contact with the organisms. The third and fourth requirements are important in that organic matter is always present to some extent in the root canal and of course in variably present in the periapical area. Many drugs will not penetrate into organic matter nor effectively destroy bacteria in the presence of organic matter and such drugs are very poor root canal antiseptics. A corollary to this statement is the fact that as much organic material as possible should be eliminated from the root canals in any case under treatment. In our hands we have found that this can best be accomplished by a thorough washing with sodium hypochlorite solution N.F. This drug is a solvent for pus, blood, necrotic tissue and other types of organic matter found in root canals. The pulp chamber and canals are washed with it both following the opening of the pulp chamber and between all succeeding treatments.

The fifth requirement, that a good root canal antiseptic must be non-injurious to periapical tissues, we feel is of very great importance. When periapical tissues are normal they should be kept that way dur-

*The Difco Laboratories, 920 Henry Street, Detroit, Michigan.

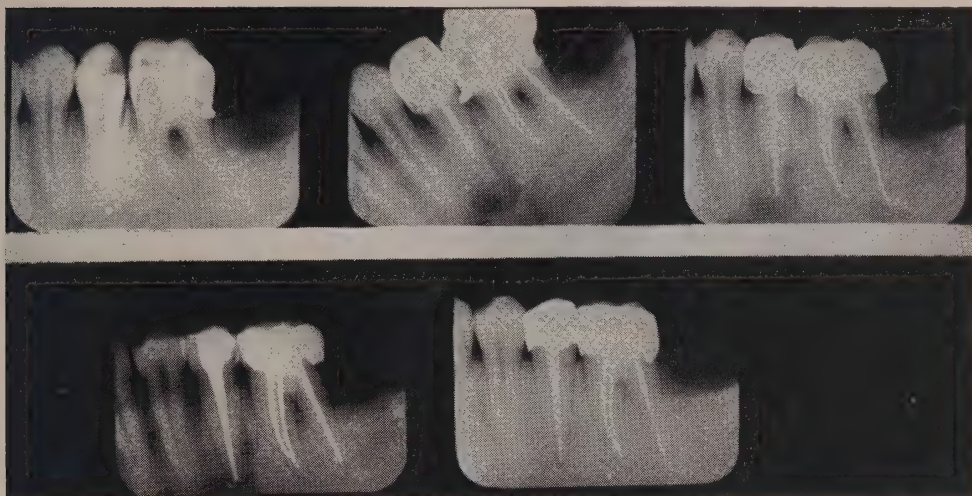


FIG. 3.

Development of a periapical area as a result of using caustic drugs (formaldehyde-cresol and phenol) during the treatment of a mandibular right second bicuspid. The area later regenerated (last X-ray in the series) but had a less excellent root canal filling been placed in the tooth, failure would probably have resulted. The molar was treated with a non-irritating drug (camphorated p. chlorophenol) and no periapical injury occurred.

ing root canal treatments. The use of highly caustic drugs such as formaldehyde cresol preparations, iodized phenol and others which were once widely used can, and frequently do cause injury to periapical tissues (Fig. 3). Obviously the prognosis for a successful case is not as good when periapical tissues have been injured by a caustic drug. The requirement that a root canal drug should not discolour tooth structure seems so obvious as to require no discussion, while desirable requirements 7, 8, and 9 are by no means essential.

It would be impossible to spend the time required to discuss all drugs which approach this ideal closely enough to make them useful as root canal antiseptics. Therefore we shall limit our discussion to a few drugs which we have found most useful in our own hands. The drug which we most frequently use is camphorated parachlorophenol, made by combining three parts of crystalline parachlorophenol N.F. with seven parts of gum camphor. When combined in these pro-

portions these substances spontaneously liquify, forming a clear colourless, oily liquid which penetrates well and is non-irritating. Studies conducted in our clinic have indicated this drug to be more effective than the older caustic drugs⁷. No single drug should be relied upon to treat all cases and we occasionally make use of a zinc iodide-iodine preparation of the following formula:

Zinc Iodide	15.0 Gm.
Iodine Crystals	0.6 Gm.
Distilled Water	50.0 cc.

This formula was originally suggested as an electrolyte for electromedication but we have found that it also is quite effective when sealed into the root canal without use of the electric current. The concentration of iodine which it contains is not sufficient to make it significantly irritating nor to discolour teeth.

Chloroazodin U.S.P. (Azochloramide) in a concentration of 1:125 in triacetin is quite effective so far as its antiseptic action is concerned and is used on occasion. It is non-irritating but tends to discolour

some anterior teeth and an excessive amount of exudate has sometimes been noted following its use. Over the years Wood Creosote N.F. (Beechwood Creosote) has enjoyed a considerable popularity as a root canal antiseptic and is undoubtedly quite effective. Its desirability is limited by the fact that it is more irritating than the above antiseptics and its pungent odor is found distasteful by many.

Electromedication (Ionization, Ionic medication) of root canal and periapical infections has retained some degree of popularity over a period of many years. However, there have been several misconceptions of its effectiveness and statements to the effect that a single electromedication treatment of a root canal infection will routinely result in sterility are definitely incorrect. Studies conducted at the University of Michigan have shown that in many instances root canal and periapical infections persist after several electromedication treatments. Table 6 shows two examples of poor results with electromedication.

TABLE 6

Examples of Unsuccessful Electromedication

CASE I—Tooth No. 7		CASE II—Tooth No. 9	
Appointment	Bacteriology	Treatment	Bacteriology
First.....	Variety of Organisms	Elect. Medic. 30 M.A.M.	Variety of Organisms
Second.....	No culture	Acute—open for drainage	Strep. Viridans and anhem.
Third.....	Variety of Organisms	Elect. Medic. 30 M.A.M.	No Growth
Fourth.....	Strep. Viridans	Elect. Medic. 7 M.A.M.	Strep. Viridans
Fifth.....	Strep. Viridans	Elect. Medic. 8 M.A.M.	No Growth
Sixth.....	Strep. Viridans	Elect. Medic. 15 M.A.M.	Strep. Viridans
Seventh.....	Strep. Viridans & Bacil. Acid	Elect. Medic. 30 M.A.M.	No Growth
Eighth.....	Strep. Viridans	Elect. Medic. 30 M.A.M.	No Growth

It will be seen in Table 6 that case 1, a maxillary right lateral, was treated seven times with electromedication without eliminating the infection which was predominantly *Streptococcus Viridans*. The dosage ranged from seven to thirty milampere/minutes. Case number two, a

maxillary left central, was treated six times with electromedication before two successive negative cultures could be obtained. Camphorated parachlorophenol was substituted for electromedication in the seventh and eighth treatments but had no bearing on the case since negative cultures were obtained after the sixth electromedication. The cases tabulated in Table 6 are only two examples of many instances which we have seen requiring multiple treatments with electromedication to obtain negative cultures. Therefore no one should rely on electromedication as a sure means of eliminating root canal infection with only one treatment.

On the other hand it would be unfair to leave you with the impression that electromedication always gives such poor results. Table 7 shows some examples of good results obtained from this form of therapy.

TABLE 7
Examples of Successful Electromedication

CASE III—Tooth No. 19		CASE IV—Tooth No. 7	
Appointment	Bacteriology	Treatment	Bacteriology
First.....	Strep. Viridans	Elect. Medic. 45 M.A.M.	Variety of Organisms
Second.....	No Growth	Elect. Medic. 15 M.A.M.	Strep. Viridans and anhem.
Third.....	No Growth	Glycerite of Iodine	No Growth
Fourth.....	—	—	No Growth

In our own hands we no longer use electromedication frequently. Several studies have indicated that one can expect approximately similar results when such drugs as camphorated parachlorophenol are used and the chair time is considerably less as compared with electromedication.

The values and limitations of antibiotics in the treatment of root canal and periapical infections were discussed in the article on antibiotics. (*J.C.D.A. Dec., 1953*).

HERMETIC SEAL OF THE ROOT CANALS

The third major requirement for routinely successful root canal therapy is the hermetic sealing of the root canals. Un-

less a technique is used which results in a tight sealing of the canal at or near the apex of the root canal the dentist's efforts toward accurate diagnosis, careful drug therapy and bacteriologic controls may well be wasted. Experience has shown that an incomplete or leaking root canal filling will usually fail and many times will eventually become reinfected.

There are several methods available for filling root canals. Regardless of what technique is used a smoothly filed canal, a clean canal, and a dry canal are essential and whatever material is used in the filling process should meet three major requirements as follows: 1) It must be easily workable; *i.e.* it must be easily introduced into the canal producing a hermetic seal. 2) It must be well tolerated by tissue since there is bound to be some contact with living tissue at the apex of the root and even the most expert operator occasionally over-fills a canal. 3) It must not be absorbable by body tissue since this would result in delayed leakage.

The two techniques which have been found most effective in our hands are the silver point technique and the lateral condensation of gutta percha points. In both cases the points are seated into a root canal sealer mixed to the consistency of inlay setting cement and of the following formula:

* Powder	
Zinc oxide C.P.	41.2 Gm.
Precipitated Silver C.P.	30.0 Gm.
White rosin U.S.P.	16.0 Gm.
Thymol Iodine N.F.	12.8 Gm.
* Liquid	
Clove oil	78.0 Gm.
Canada Balsam	22.0 Gm.

* This formula obtainable commercially under the trade name of Kerr's Sealer.

This cement has been demonstrated by Rickert and Dixon to be very well tolerated by the tissues and is of a consistency which makes for easy workability (Figs. 4a and 4b). Both gutta percha and silver are also well tolerated by the tissues.

Obviously it is impossible through a single lecture or through the pages of a

written article to teach the details of a given root technique. The mastery of a technique for filling root canals requires



FIG. 4a.

Low power of area in muscle of rabbit in which root canal sealer was implanted. Note absence of any foreign body reaction.

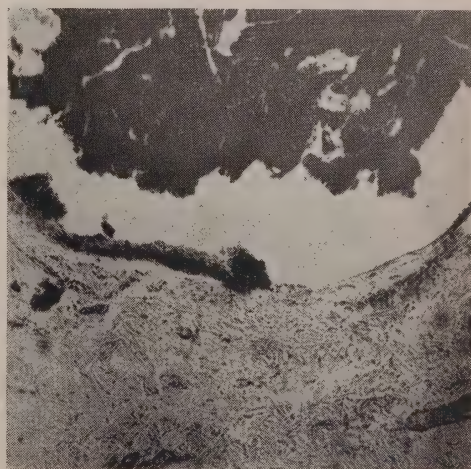


FIG. 4b.

High power of area shown in Fig. 4a. The only evidence of reaction that could possibly be attributed to the sealer was the presence of a few giant cells. (Figs. 4a and 4b from the work of U. G. Rickert and C. M. Dixon.)



FIG. 5.

Football injury with traumatic exposure of pulps of right lateral, left central and lateral. Well-condensed gutta-percha root canal fillings with gold core porcelain jackets in place. (Last two X-rays in series.)

patience and practice the same as does the mastery of any other technique in dentistry. However we shall briefly present an outline of the steps involved in each technique.

Regardless of what technic is used all work must be done under a rubber dam using a sterile technique. The gutta percha filling is indicated largely in the maxillary anterior teeth where the canals are large and irregular and where there is frequent indication for a restoration requiring a

post in the canal. After sterile cultures are obtained the root canal is filed to a No. 5 or No. 6 Kerr file. A trial x-ray is then taken to establish accurate length, the canal dried and the walls of the canal are covered with the sealer. Gutta percha points are then condensed into the canal by means of a Kerr No. 3 spreader until it is completely filled. The finished filling should show a high degree of radiopacity and should be uniform in density (Figs. 5, 6, and 7). The greatest advantage of

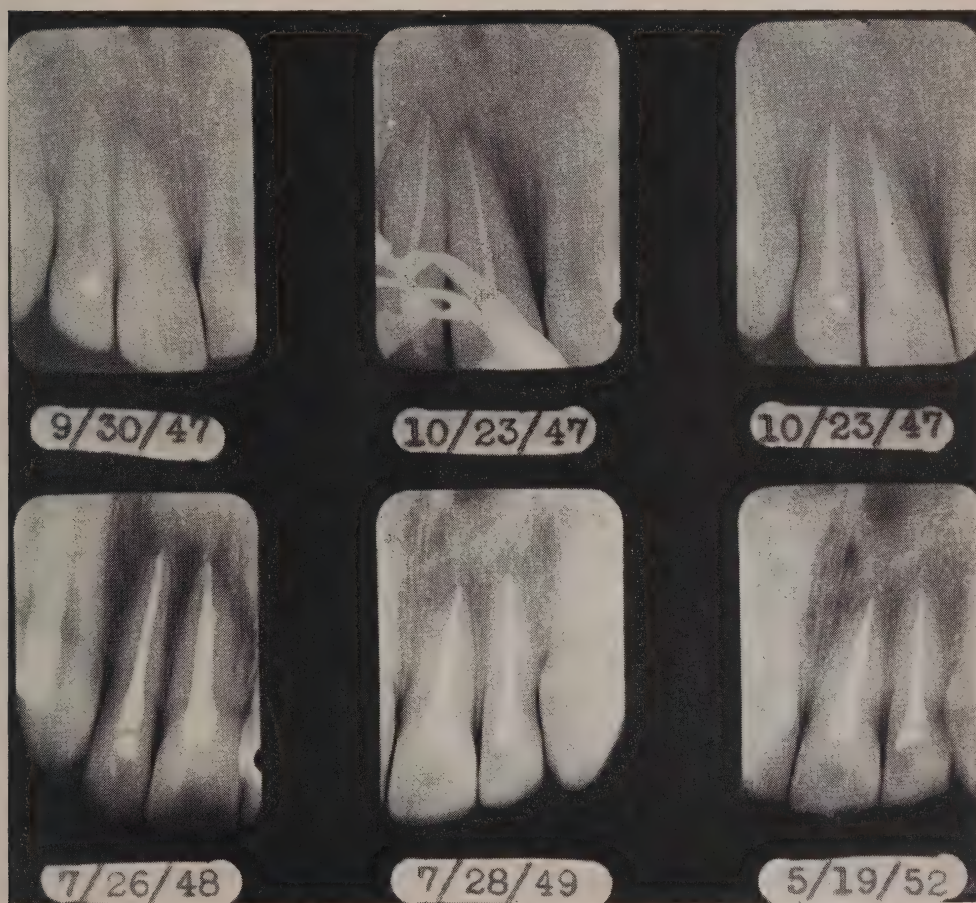


FIG. 6.

Pulp death in left maxillary central and lateral due to football injury in fourteen-year-old boy (9/30/47). Trial point X-rays and completed gutta-percha root canal fillings (10/23/47). Note normal periodontal membrane and lamina dura five years later (5/19/52).

this type of filling is the ease with which a portion of it can be removed for insertion of a post for a restoration. Its weaknesses are the tendency toward overfilling where an open apex is present and the difficulty of negotiating curved canals.

The silver point technique is indicated in most posterior teeth and mandibular anterior teeth. It is a precision technique which depends upon the accurate fitting

of a silver point into the canal which has been filed by a root canal file of similar size and taper to that of the silver point. After sterility has been obtained the canal or canals of the tooth are filed to a size of Kerr root canal file which actually is cutting the walls of the canal. Thus the canal is milled to a given size and taper and a silver point of similar size and taper is then fitted into the canal. A trial

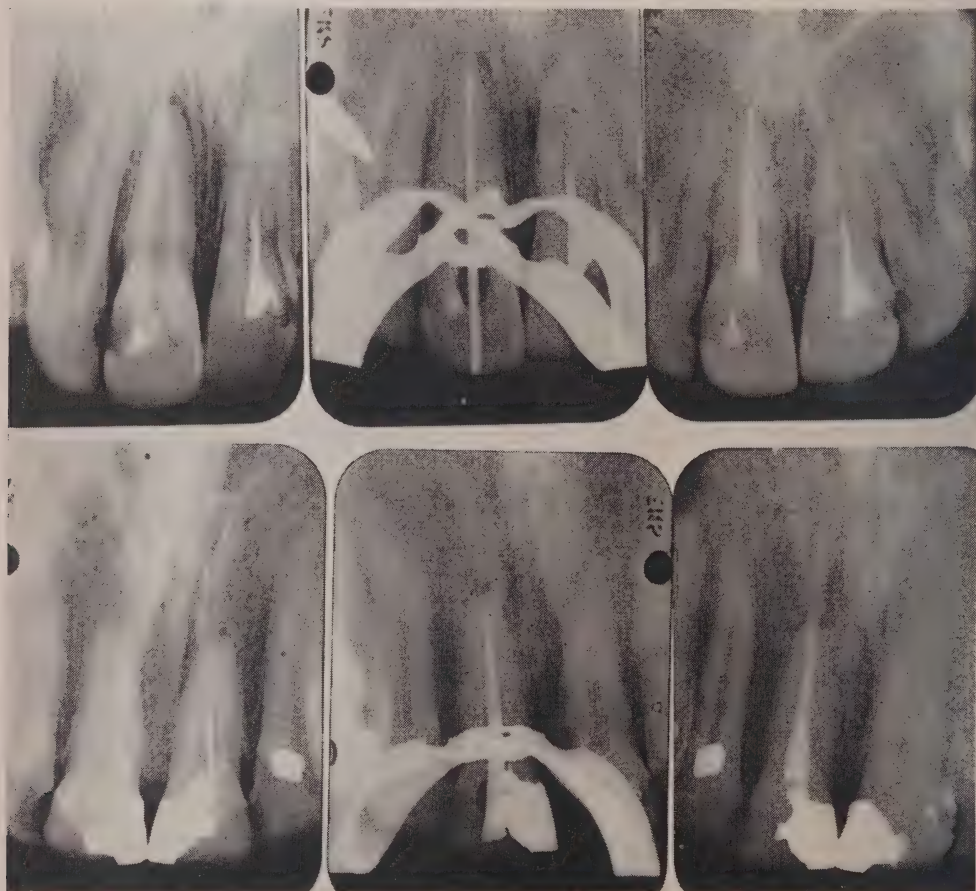


FIG. 7.

Contrasting good and poor root canal fillings. Upper left—Poor root canal filling in right central with pulp death in left central. Upper right—Contrast the excellent gutta-percha root canal filling in the left central with the poorly filled right central. Lower left—Poorly filled maxillary central. Lower right—Corrected root canal filling in the same tooth. A pure culture of *Streptococcus viridans* was isolated from this tooth. When root canal fillings are attempted with single gutta-percha points they usually fail because the canal is inadequately sealed.

x-ray is taken to determine accurate length and any necessary corrections are made. The canal is dried, the walls of the canal are covered with sealer and the silver point is carefully seated in place. The floor of the pulp chamber is carefully covered with a thin layer of gutta-percha and after dissolving away the excess sealer from the crown of the tooth a cement base is placed. A suitable restoration is then placed on the tooth. The advantage of this technique is the ease with which the small, curved canals of posterior teeth can be filled. The silver points will negotiate these canals much more rapidly than is possible with gutta percha (Fig. 8).



FIG. 8.

Examples of excellent silver point root canal fillings on molar teeth. (Cases done by Dr. Glenn R. Brooks, Rochester, Michigan.)

Combination silver point and gutta percha fillings are also frequently used. In this technique a silver point is seated as the initial point and then gutta percha points are condensed around it. This technique is used in many instances where a large canal with open apex is present or where there is a marked curvature in the apical one-third. Its advantage is that the silver point seals off the apex and prevents overfilling and will negotiate certain curvatures which gutta percha will not. It is not as easy to remove this type

of filling for a post as the straight gutta percha filling, but it can be accomplished by means of a sharp, round bur which is slightly larger than the canal (Figs. 9 and 10).

CONSERVATIVE TREATMENT VS. PERIAPICAL SURGERY

Some years ago it was generally thought that root resection was essential whenever periapical pathology was present but our present attitude is much more conservative in this respect. It has been found that a very large portion of cases with periapical pathology present will regenerate without surgery if negative cultures and an accurate root canal filling are obtained. Perhaps part of our change in attitude is due to some as yet unpublished data which have been obtained from biopsies of several hundred periapical areas. Whereas we were formerly inclined to think that most large periapical areas were cysts, we have found that only a very small portion of those studied microscopically show cystic degeneration. Thus pathologic evidence indicates a more conservative attitude toward periapical surgery is justifiable and this has been borne out by clinical regeneration of most conservatively treated periapical areas. (Fig. 11).

In certain instances such as the presence of true cysts, resorbed root tips, root tips fractured in the periapical one-third or extensive overfilling of root canals periapical surgery is indicated. But even here we are more conservatively minded than previously. At one time it was thought that it was necessary to resect roots back to the furthest extent of the periapical pathology. While good results were obtained by this method, it resulted in unnecessary loss of root structure. More recently we have found that periapical areas regenerate just as well if not better, when the root tips are left intact (Fig. 12). Thus our present periapical surgery is more in the nature of periapical curettage with very little or no resection of the root tip.

CONCLUSION

Three major requirements for successful root canal therapy have been presented as follows: 1) Accurate diagnosis; 2) elimination of all infection within the root canal and periapical area by means of therapeutic measures and bacteriologic controls; and 3) hermetic sealing of the

pulp canals. In addition the advantages and limitations of periapical surgery have been discussed.

It seems probable that most of the root canal failures which have led some dentists and physicians to condemn the pulpless tooth as a menace to health are due to failure to observe one or more of the

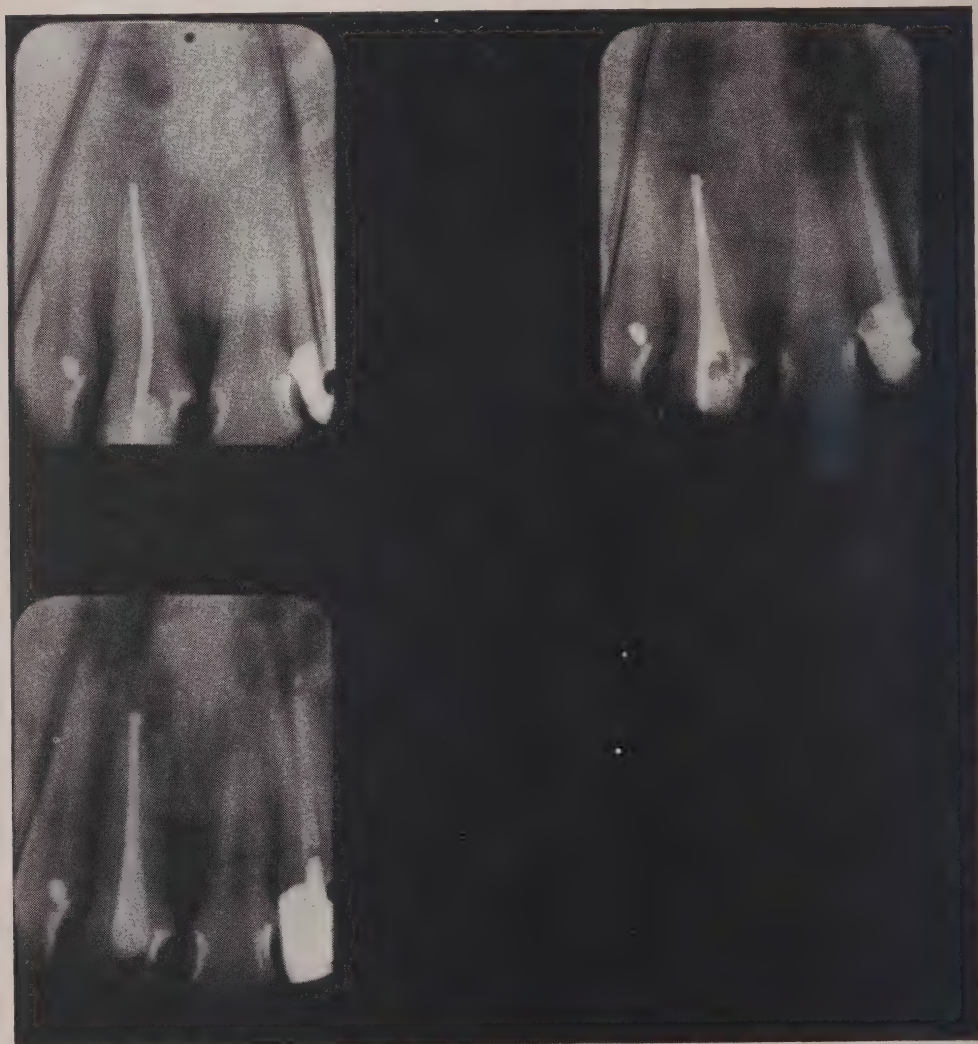


FIG. 9.

Combination silver point and gutta-percha filling in maxillary left central. The silver point closes the apex and prevents overfilling during the condensing of the gutta-percha.

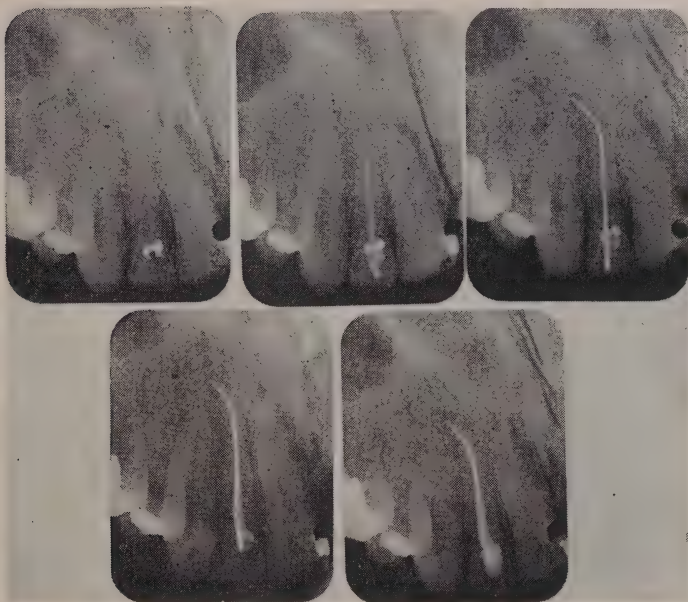


FIG. 10.

Combination silver point and gutta-percha filling of maxillary left lateral. Note how the silver point negotiated the apical curvature.

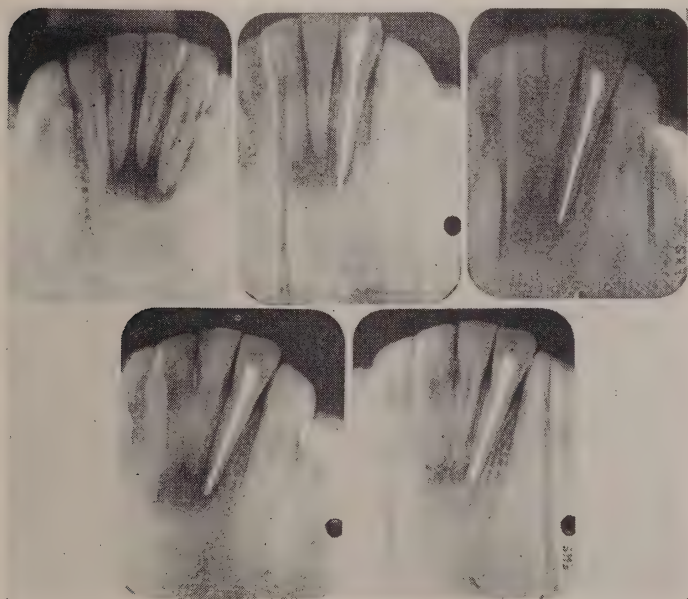


FIG. 11

Recalcification (without surgery) of large periapical area involving the apices of three mandibular anterior teeth. The pulps in the two centrals were vital. X-rays cover a period of one year.

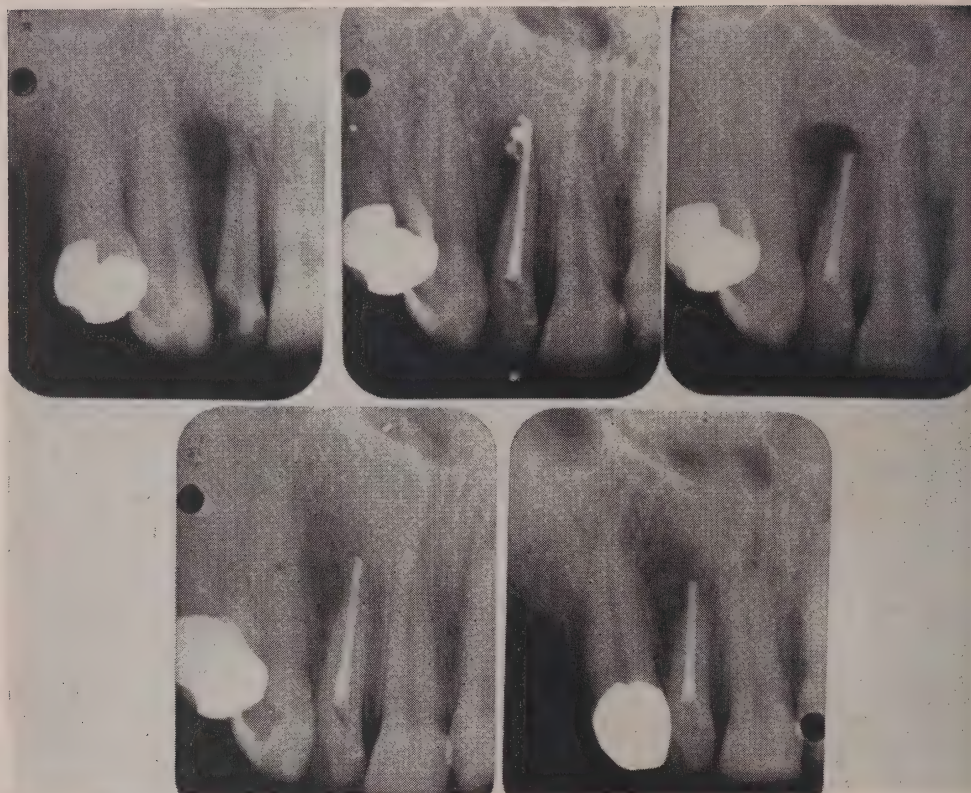


FIG. 12.

Recalcification of periapical area following curettage without resection. A) Upper left — periapical involvement of maxillary left lateral. B) Canal overfilled. C) Immediately after curettage. D) Lower left—five month check-up x-rays. E) Ten month check-up x-rays.

above requirements. On the other hand a growing number of dentists are carrying on the practice of endodontia by means of techniques which observe these fundamentals and with routinely successful results. The achievement of a successful practice of endodontics is within the capacity of any good dentist and can be carried out in any well equipped dental office.

BIBLIOGRAPHY

1. Freyberg, Richard H. Focal Infection in Relation to Rheumatic Diseases; A Critical Appraisal. *J.A.D.A.* 33:1101, September, 1946.
2. Boland, E. W., Headley, N.E., and Hench, P. S. The Effect of Penicillin on Rheumatoid Arthritis. *J.A.M.A.* 126:820, November 25, 1944.
3. Hench, P. S., Kendall, E. C., Slocumb, C. H., and Polley, H. F. The Effect of a Hormone of the Adrenal Cortex (Compound E) and of Pituitary Adrenocorticotrophic on Rheumatoid Arthritis. *Proceedings of Staff Meeting of the Mayo Clinic*, 24:181, April 13, 1949.
4. Hench, Phillip S., Slocumb, Charles H., et al. The Effects of the Adrenal Cortical Hormone, 17-hydroxy-11-dehydrocorticosterone (Compound E) on the Acute Phases of Rheumatic Fever. *Proceedings of Staff Meeting of the Mayo Clinic*, 24:277, May 25, 1949.
5. Easlick, Kenneth A., et al. An Evaluation of the Effect of Dental Foci of Infection on Health. *J.A.D.A.* 42:614, June, 1951.
6. Grossman, Louis I. Probable Percentage of Correct Guesses Regarding Sterility of Root Canal Without Bacteriological Control. *J. Dent. Res.* 15:364, September, 1936.
7. Ostrander, F. D., and Crowley, M. C. Effectiveness of Clinical Treatment of Pulp-Involved Teeth as Determined by Bacteriological Methods. *J. Endodontia*, 3:6 January, 1948.
8. Sommer, Ralph F., and Crowley, Mary C. Bacteriological Verification of Roentgenographic Findings in Pulp-Involved Teeth. *J.A.D.A.* 27:723, May, 1940.
9. Hedman, Warren J., An Investigation into Residual Periapical Infection after Pulp Canal Therapy. *Journal Oral Surg., Oral Med., and Oral Path.*, 4:1173, September, 1951.
10. American Dental Association, Accepted Dental Remedies, Chicago, 1953.

A paediatrician views fluoridation*

by M. ARMACOST COX, M.B., Toronto

During the last war the Canadian Dental Association was asked to make a survey of the dental needs of the Canadian people. Since a high proportion of the men examined for war service exhibited extensive dental disease it was felt that a survey was needed. These dentists reported that a great amount of treatment was necessary and a relatively small proportion of the citizens were receiving adequate dental care, that to provide dentistry to every one would be impossible and that any comprehensive program of service would have to be limited to children up to 12 years of age. It was hoped by this plan that through prevention many of the dental ills of adult life could be avoided. Few people realize, though only a part of the population receive adequate care, how much money is being spent for this purpose.

The simplest and the cheapest form of prevention, that of adding fluorides to the drinking water, has been recommended by our Medical Officer of Health, but has not so far been accepted because many fear that the undeniably favourable improvement in the teeth that is sure to accrue, will be accompanied by some disastrous form of poisoning.

One of the first people to suggest a relationship between fluorides and dental health was Sir James Crichton-Brown—"The late Dr. George Wilson showed that fluorine is more widely distributed in nature than was before his time supposed, but as he pointed out, it is but sparingly present where it does occur and the only channels by which it can apparently find its way into the animal economy are through the siliceous stems of grass and the outer husks of grains, in which it exists in comparative abundance. Analysis has proved that the enamel of the teeth contains more fluorine, in the form of fluoride calcium, then any other part of

the body and fluorine might indeed, be regarded as the characteristic chemical constituent of this structure, the hardest of all animal tissue and containing 95.5% of salts, against 72% in the dentine. As this is so, it is clear that a supply of fluorine while the development of the teeth is proceeding, is essential to the proper formation of the enamel and any deficiency in this respect must result in thin and inferior enamel." "I think it well worthy of consideration whether the re-introduction into our diet, and especially into the diet of child-bearing women and of children of a supply of fluorine in some soluble natural form might not do something to fortify the teeth of the next generation." His suggestion was to use more whole grains as foods. Present day food analyses show that grains contain large amounts of fluorine where the soil is rich in fluorine. This article was given by Sir James Crichton-Brown in 1892, more than 60 years ago.

TABLE 1

FOODS	Fluorine approx. p.p.m.
Milk	0.07 to 0.22
Butter	1.50
Beef	0.20
Pork	0.20
Fresh Fish	1.60 to 7.00
Rice	1.00
Flour	1.10 to 1.20
Spinach	1.00
Tomatoes	0.60 to 0.90
Carrots	0.20
Potatoes	0.20
Apples	0.80
Oranges	0.22
Tea leaves vary but can contain up to 100 parts per million.	

TABLE 2

A study of the fluorine content of all meals served for one week at the Minnesota General Hospital showed an average daily intake of 0.10 to 0.32 mg of fluorine per individual exclusive of any tea consumed. Practically all foods contain some fluorine.

The four Halogens, bromine, chlorine, iodine and particularly fluorine, are widely distributed in nature. All have many uses. All in great concentration are poisonous, but strangely enough all are used in weak concentration by many individuals and in weak concentrations are

* Delivered to the Academy of Medicine, Toronto.

not only harmless but beneficial, if not actual necessities to our well-being.

Fluorine is normally found in bones and teeth and resistance to dental caries seems to be directly in proportion to the amount of fluorine in the enamel. Further, caries immunity acquired by the ingestion of fluorine during the period of tooth calcification is retained into adult life even if fluorides are withdrawn.

Our knowledge of fluorine in the human economy stems largely from investigations into the cause of what we now call mottled enamel. In certain areas in the South and West individuals born and brought up in these regions had peculiar teeth, unusual in colour, sometimes ugly brown, occasionally pearly white, and frequently deformed. These teeth were found to be harder than normal and difficult to work with. Black and McKay, in 1913, investigating such teeth in Colorado Springs, where 80% of the inhabitants had mottled enamel, proved that this condition was due in some way to the water consumed in that area, but it was not until 1931 that H. V. Churchill, Dean and others proved the substance in the water to be fluorine present as 14 ppm. Churchill's report led to investigations wherever mottled enamel was to be found and all investigations proved the presence of fluorine in various amounts, but usually in high concentration in the drinking water. In all these areas, as well as fluorine, caries resistant teeth were found to be the rule rather than the exception. Since 1931 more investigations, more research, more surveys of regions with and without fluorine in appreciable amounts have been done and each new investigation has further confirmed the importance of fluorine in the building of teeth resistant to dental caries.

One could spend many hours showing illustrations containing all the facts and figures compiled by the many scientists who have proven beyond all doubt that where fluorine of one ppm. or more is consumed in water one will find caries resistant teeth:

4 to 6 times as many children will be caries free,

about 35% to 40% will have a lower caries experience rate,

about 60% to 70% decrease in first or 6 yr. molar loss,

and about 80% to 85% less dental caries in the upper four incisors or an over-all 65% improvement in the whole caries picture.

To be most effective fluorine must reach the teeth at the period of calcification. The Hutchinson's teeth of inherited syphilis occur because the secondary signs of syphilis usually occur at about 2 to 3 months of age and hence leave their mark on the teeth in process of being calcified at that time namely the upper and lower incisors and the six-year-old molars.

Just how an increase in the fluorine content of the tooth acts to reduce decay is not known but an examination of what we know about the production of caries suggests several ways in which it may function.

Experiments at Notre Dame, and later in other places, with animals raised in sterile surroundings and fed sterilized foods have proven that bacteria are necessary for the production of dental caries, for while these animals remain caries free—control animals on the same, but unsterile, foods have rampant caries.

All dental workers, I believe, agree that bacteria are necessary for dental decay but all do not agree on the type of bacteria.

The most favoured theory of dental caries is that put forward by Miller in 1885, in which he concluded that the tooth substance was lost by the action of acid produced in the plaques on the teeth by the *Acidophilus bacillus*. That this organism, thriving on the sugar and CHO, residued from the diet, causes by enzyme action the degradation of CHO to lactic acid.

Two other theories—one of Gottlieb—that the initial destruction of the keratin-like protein between the columns of enamel by proteolytic action of alkaline

producing organisms is not widely accepted because in most mouths with caries immunity we find the oral flora to be a proteolytic one.

A new theory, expounded by Pincus in 1950, suggests that the destruction is accomplished by acid but not lactic acid. He claims he has found an organism that produces an enzyme Sulphatase that is able to make sulphuric acid from mouth protein and hence the destruction. This might well occur in defects of the teeth as in deep pits and fissures but not at all likely in the areas where caries is most commonly found.

Evidence favouring the lactic acid theory is found in the salivary counts for *Baccillus Acidophilus* colonies.

Salivary counts, first introduced by Bunting of Ann Arbor and later perfected by Bunting and Jay are used by many dentists as an index of caries susceptibility. These counts are made, free of charge, by the Dental Division of the Provincial Board of Health. Many thousands of counts have been done by the Preventive Dentistry Laboratory at the Faculty of Dentistry, University of Toronto. Individuals who are markedly susceptible to caries will give counts of several hundred thousand colonies per cc. of saliva whereas those with no caries will have negative counts or counts of less than 10,000. Children with high counts can be put on a diet, designed by Jay, for a period of about 2 weeks at which time the count is repeated. In about 85% of these children the count will drop to lower than 10,000 in 2 weeks and they can be gradually re-instated to a normal diet, but a diet in which sugar is markedly reduced or absent. These children will retain the low count and a relative immunity to decay for 6 months up to two years provided they refrain from excessive CHO. This routine works very well indeed in institutions because the inmates have no money, no stores to shop in and have locks on the pantry door. In private practice few parents have the strength of character to carry out this program. Pe-

riodic dental check-ups, of course, are a necessity in any caries preventive program. These counts are mentioned because in areas where fluorine is used in the water the counts are uniformly low regardless of the diet, so fluorine in some way inhibits the growth of these bacilli.

Now tooth destruction requires a pH of 5 and lactic acid organism also requires a pH of 5 to thrive and produce acid. For the area within the plaque to reach a pH of 5 organisms that can produce acid at a higher pH are necessary and these are the acid producing streptococci of the mouth, for the saliva keeps the oral cavity close to or at times above neutral or pH of 7. Resting saliva has a pH of 6.8 slightly acid—probably due to the fact it is largely parotid saliva which is always acid, partly due to the presence of a fair amount of acid mucin and partly to absorbed CO_2 from the exhaled air. Stimulated saliva on the other hand, largely from the sub-maxillary and sub-lingual glands is alkaline 7.8 to 8.0. Saliva also contains buffer salts capable of neutralizing acids. But this alkaline saliva is unable to penetrate the plaques located in the areas of salivary stasis. The bacteria, utilizing CHO forced into the plaque and using enzymes made by the organisms or contained in food, produce the necessary acid for the destruction of the enamel.

In some way fluorine interferes with this acid production; concentrations of fluorine strong enough to kill organisms would not be available even in water with more than the usual number of ppm. Bibby, who believes that the important organism in caries production is the mouth streptococci was able to inhibit acid production by these organisms with solutions of fluorine of a strength more nearly approximating that used in caries control. If the combined fluorine absorbed by the plaque and that freed from the enamel were sufficient to inhibit further acid production, then the pH of the plaque would not drop sufficiently to enable the lactic acid to flourish. This is, perhaps, the reason we consistently find low saliva

counts of lactic acid organisms where fluorine is present in sufficient strength to limit caries activity. Fluorine may also act as an enzyme destroyer.

Granted that fluorine can be used to control dental caries, what of its possible dangers, and can these dangers be prevented or controlled?

There are approximately 4,000,000 people on this continent using water for all purposes, including drinking water, from natural sources and containing more than 1 ppm. of fluorine. Indeed, in Texas, one community has been using water containing 18 ppm. for years. We speak of this type of water as containing fluorides naturally, but in truth the fluorine has been added to the water as it passed over rock formations containing fluorides in some form. I can find no records of proven toxic effects where this water consistently contains less than 10 ppm. except that of mottled enamel and rarely excessive storage of fluorine in the bones. In both South Africa and in India bone changes have occurred where the fluorine content is higher than 10 ppm., where the soil is rich in fluorine and where malnutrition is frequent. Practically all cases of fluorine poisoning on this continent and in Europe are reported in miners who have been exposed for years to dust containing fluorides or in those individuals working with fluorides.

A bulletin published by the American Dental Association toward the end of 1952, states that by the end of 1952 some 35,000,000 people in the United States will be using water to which fluorine has been added up to 1 ppm.

In some areas where high concentrations of fluorine in the water are causing mottled enamel, efforts are being made to reduce the content of fluorine to a level of 1 ppm. for at this level visible mottling does not occur but the desired resistance to decay does. Would any one seriously recommend the removal of all fluorine from these waters so as to replace the mottled enamel with increased dental decay? Isn't it more sensible to reduce the

fluorine to a level where mottled enamel does not occur but where the resistance to decay is retained?

Acute morbidity manifested by increased salivation and vomiting, may be caused by ingesting 0.25 gm. of sodium fluoride. This quantity in an 8 ounce glass of water represents 1,000 ppm. of sodium fluoride, or about 450 ppm. fluorine. To obtain this concentration, it would require more than four tons of sodium fluoride per million gallons of water processed, which is obviously not possible in a program of water fluoridation, even if gross negligence occurred.

It is estimated that the amount of fluorine ingested daily through drinking water containing 1 ppm. fluorine is from 0.5 to 1.0 mg. It has been shown that when the total amount of fluorine ingested by adults does not exceed 4.0 to 5.0 mgm. daily, its elimination in the urine, perspiration and fecal excretion is virtually complete. The ability of the body to handle fluorides, then, is more than adequate for the amount ingested through fluoridated water. (See Table 3.)

The average adult drinking-water consumption in a temperate climate seems to be about 1200 to 1600 cc. per day. At this rate the domestic use of water containing 1.00 ppm. of fluorine provides approximately 1.2 to 1.6 mg. of fluorine daily. Similarly water containing 4.0 to 5.0 ppm. of fluorine may contribute 4.8 to 5.8 mg. to the daily fluorine intake. This latter fluorine exposure applied to the average adult weighing 150 lbs. or about 68 kilograms represents roughly the ingestion of 0.07 to 0.12 mg. fluorine per kilo of body weight daily. Children up to age of 12 years, exposed to drinking water containing 1.0 ppm. of fluorine will ingest via food and drinking water about 0.8 to 1.1 mgm. fluorine daily, equal to about 0.05 mg. fluorine per kilo body weight.

Normal mixed diet alone usually averages between 0.10 to 0.30 ppm. providing approximately 0.3 to 0.5 mgm. of fluorine daily regardless of drinking water.

The elimination of absorbed fluorine via

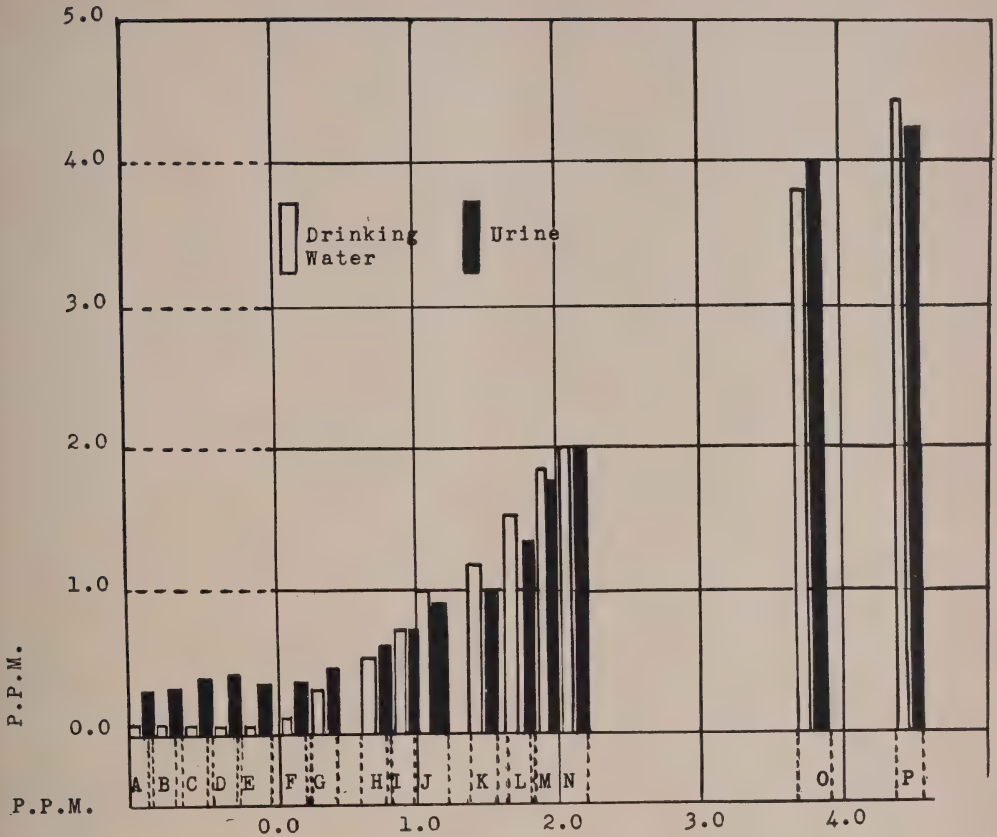


TABLE 3.

Relation of fluorine in drinking water to fluorine content of urine.

the urine and perspiration is practically complete when the quantities absorbed do not exceed 4.0 to 5.0 mg. daily. There was no significant retention of fluorine in the bodies of young adult men when total daily fluorine ingested did not exceed 4.0 to 5.0 mg. daily. This data suggests that there may be the limits of fluorine which may be ingested daily without possible hazard of body storage of fluorine. The 1 ppm. as I said earlier provides only 1.2 to 1.6 mg. of fluorine daily.

Those who fear the use of fluorine should remember that the whole idea of using fluorides for the control of dental caries evolved directly from thirty years of studies on the possible detrimental

effects of fluorine, carried out by physicians, biochemists, physical chemists, bacteriologists, nutritionists, public health officials as well as dentists. That in the beginning and over all these thirty years their one problem was the eradication of what was in 1931 proven to be fluorine toxicosis. And we should remember 14 more years of study were carried on with this problem all over the world before the public were asked to accept fluoridation.

If we are to use fluorides for caries control we must remember that no claims are made for absolute immunity to caries. The expected improvement is 65%. If all other ways of controlling caries are dis-

carded, some are sure to suffer. The dentist must still play a prominent and essential part in any health programs related to the teeth.

In closing, I should like to quote the terminating paragraph of an article that appeared in the *Lancet*, May 10, 1952, by E. F. W. MacKenzie, O.B.E., M.C., M.B., D.P.H., Director of Water Examination, Metropolitan Water Board, London, England. "I have tried to present impartially the evidence for and against the fluoridation of public water supplies. We are justified in believing that it is possible substantially to reduce the incidence of dental caries without any undesirable effects.

The fluorine content of water which confers the greatest benefit without harm is known and can be maintained with great accuracy by established methods of dosing. Other vehicles for fluorine have been tested and have all been found wanting. The cost is relatively unimportant."

BIBLIOGRAPHY

- Churchill, H. V. *Journal of Dental Research*, Vol. 12—1932.
 Gottlieb, B. *Dental Caries* (book) 1949.
 Pincus, P. *British Medical Journal*—August 19, 1949.
 American Dental Association Bulletin—1952.
 Cox, Chas. R. and Ast, D. R. *J.A.W.W.A.* 43-641—1951.
 Cox, G. J. and Hodge, H. C. *J.A.D.A.*—April 1950.
 McClure, F. J. *American Journal Diseases of Children*—October 1941.
 McClure, F. J. *American Association for the Advancement of Science*—1946.

It has been asserted that the consumption of a fluoride-bearing water will lead to an increase in periodontal disease. A little careful reasoning as follows will indicate that this is not true. It is generally believed that after age 30 periodontal disease causes a greater loss of teeth than does dental decay. Now, if it were further true that a fluoride-bearing water increased periodontal disease, it would of necessity follow that the rate of loss of teeth following age 30 would be greatly accelerated in a fluoride area with the consequence that there would be no increased, or there might even be a decreased, number of teeth remaining in the mouth of later ages. Comparison of older age groups in fluoride and non-fluoride areas has shown, however, that the reverse is true. This study showed that adults in a fluoride area retained many more teeth than did individuals of the same age in a non-fluoride area.

J. Roy Doty, Ph.D., *Secretary of the Council on Dental Therapeutics of the American Dental Association.*

People in a dentist's reception room are primarily concerned about health problems. Otherwise they wouldn't be in the reception room in the first place. Their interest in health may not be limited to the actual present condition of their teeth, but may extend to such subjects as proper care of teeth, nutrition, fluoridation of water supplies, other bodily ills attendant upon bad teeth. They are not hypochondriacs; they are just human beings, suddenly brought face to face with the importance of good health, and, at the moment, very little interested in anything else.

What do you give them to read at such a time?

HEALTH magazine, published by the Health League of Canada, presents the kind of health information laymen want in language laymen can understand, from the studies of leading physicians and dentists in Canada. Articles in HEALTH are, with few exceptions, original and exclusive to HEALTH. All are checked for authenticity by technical committees and a board of consulting editors made up of eminent medical and dental practitioners.

A new copy of HEALTH will arrive in your waiting room every two months if you become a member of the Health League. Membership and your subscription costs only \$2.00. The Health League is located at 111 Avenue Road, Toronto 5, Ontario.

The fine arts of denture prosthesis have been lost in the fallacies of mechanical concepts. This condition could be benefited by: (1) evaluating residual ridges as a changeable denture foundation rather than as a guide for tooth positioning, (2) devoting more time and study to improve the health of our patients for the preservation of their ridges, and (3) studying and applying the principles of nature as regards the placing of teeth and the anatomy of their supporting structures.

TO REVIEW BY Earl Pound, D.D.S. *The Journal of Prosthetic Dentistry*, January 1954.

Therapeutic approach to child management in dentistry*

by J. FREDERICK REID, D.D.S.,
North Vancouver, B.C.

The use of therapeutic agents as a means of relieving apprehension and sedating the difficult child patient is not routinely employed in most dental practices. It has been suggested by some that the reason for this is a general lack of understanding of the pharmacology, dose and effects of the agents that may be administered. With this in mind, the Inter-City Pedodontia Club has prepared the following information on the drugs of choice—"The Barbiturates."

(A) PHARMACOLOGY:

The barbiturates are in general central nervous system depressants with which almost any degree of depression, from light sedation through deep hypnosis may be obtained through proper selection of drug, dose and route of administration.

Oral administration of hypnotic doses of barbiturates is usually followed by slight slowing of respiration. Larger doses depress the respiratory centre directly and death from barbiturate poisoning is due to respiratory failure.

Sedative and hypnotic doses of the barbiturates used clinically cause no significant change in circulation. The blood constituents are not affected in moderate doses and there is no appreciable change in blood sugar concentration.

The basal metabolic rate is reduced by barbiturate medication given in quantities; for light hypnosis there is no significant change. Kidney function is not seriously affected by barbiturate medication and hepatic function is unimpaired by therapeutic doses.

(B) ROUTES OF ADMINISTRATION AND ELIMINATION:

The barbiturates properly selected may be given orally, rectally, intramuscularly

and intravenously. The oral route is most commonly used but rectal administration is of value in the very young.

The body eliminates barbiturates in two ways—by excretion through the kidneys with the long acting barbiturates and by destruction in the liver for the short acting barbiturates.

(C) ONSET OF ACTION AND DURATION OF EFFECT

In order of increasing duration of action barbiturates may be listed as follows—

	Onset	Duration	Av. Sed. Dose	Av. Hyp. Dose	Name of Drug
Short Acting..	15-30 min.	5- 7 hrs.	$\frac{3}{4}$ gr.	$1\frac{1}{2}$ gr.	Seconal
Moderate Acting..	30-45 min.	8-11 hrs.	1 gr.	3 grs.	Sodium { Nembutal Amytal { Sodium
Longer Acting..	45-60 min.	11-14 hrs.	$\frac{1}{4}$ $\frac{3}{4}$ gr.	$1\frac{1}{2}$ 3 grs.	Amytal
Long Acting..	60 min.	10-16 hrs.	$\frac{1}{4}$ - $\frac{1}{2}$ gr.	$1\frac{1}{2}$ -3 grs.	Phenobarbital

(D) TOXIC EFFECTS OF THE BARBITURATES

Toxic reactions may occur as a result of overdosage or of individual susceptibility to the drug, but death from sedative or hypnotic doses is practically unknown.

Hypersensitivity may occur and is usually characterized by excitement, hyperpyrexia or skin eruptions. However such occurrences are quite rare.

The barbiturates should be prescribed with caution in patients with advanced cardiovascular renal disease or impaired liver function. When kidney damage is present, the shorter acting drugs which are destroyed in the liver are to be preferred. However in the presence of extensive liver disease even these compounds should be used carefully.

Fatal doses can only be established from accidental ingestion of too large doses or suicidal use. Severe poisoning usually occurs at five to ten times the usual dose and fatality at fifteen. Antidote is stimu-

* Presented to Vancouver District Dental Society, January, 1954.

lation with ephedrine $\frac{3}{4}$ gr. and $7\frac{1}{2}$ grs. caffeine followed by oxygen therapy.

Repeated and continued use of the barbiturates leads to habituation rather than addiction. The patient develops a dependence and almost invariably utilizes the drug as an escape mechanism. Tolerance is usually not increased.

(E) ADVANTAGES OF BARBITURATES FOR CLINICAL USE

They have become the most widely used sedative and hypnotic drugs due to a number of advantages . . . Through proper selection of the drug, dose and route of administration, any degree of depression from light sedation to deep hypnosis may be provided. They can be given orally or rectally and do not disturb vital functions of the body. They are not disagreeable to taste and are easily dispensed in palatable forms.

(F) BARBITURATES IN PEDODONTIA

Short acting barbiturates are administered to provide rapid sedation as an aid in handling unruly patients and facilitate examination of the oral cavity. A more useful application is in completion of procedures associated with pain. Hypodermic injections can be given without the usual disturbances if seconal is administered beforehand.

Young children who are unable to swallow medication may be given a barbiturate rectally.

DOSAGE OF 'SECONAL SODIUM' FOR SEDATION IN CHILDREN

AGE	DOSAGE	ROUTE
6—36 months	$\frac{3}{4}$ -1 gr.	Rectal
3—8 years	$\frac{3}{4}$ gr. $\frac{3}{4}$ - $1\frac{1}{2}$ gr.	Oral Rectal
8—15 years	$\frac{3}{4}$ - $1\frac{1}{2}$ gr. $1\frac{1}{2}$ gr.	Oral Rectal

Dose may be repeated in 1 hour if necessary

Another important use of the barbiturates is the alleviation of post-operative pain in order to eliminate unpleasant thoughts for the next dental appointment. The barbiturates themselves are not analgesics and will not produce sedation where pain is present. However in combination with analgesic drugs such as the salicylates, they render the analgesia more effective. When given in conjunction with analgesics only about one-third of the hypnotic dose should be prescribed.

It is hoped that the above information on these very important therapeutic aids will impart sufficient understanding so that they may be prescribed with confidence as a further aid in handling the unruly children in your practice.

Since so much confusion exists, there is no doubt that further clinical and experimental research, scientifically controlled, is necessary before the theory of focal infection can be accepted, modified, or rejected.

In the meantime, as long as bacteremia does result from oral manipulation in the presence of oral sepsis and since bacteremia has been known to be detrimental to some patients and potentially dangerous to others, especially those with cardiac damage, it would be folly to tolerate oral sepsis. This conclusion does not imply that an oral focus should be regarded as "anything readily accessible to surgery" but rather that established oral foci, periapical and periodontal, should be treated, irrespective of their relation to extraoral or systematic damage, and that in an effort to prevent bacteremia precautionary measures should be taken prior to manipulations. Furthermore, since bacteremia does occur in individuals with no apparent foci of infection, precautionary measures should always be taken with all patients who have a history of rheumatic fever or valvular heart disease such as subacute bacterial endocarditis or a congenital defect.

DAVID F. MITCHELL and EDITH ZAK HELMAN, *Jour. Amer. Dent. Assn.*, Jan. 1953,
(*Dental Items of Interest*, May 1953)

Routine trimming of minor alveolar irregularities which remain after extraction of teeth is standard procedure in most dental practices. Elimination of various other minor soft tissue and ridge irregularities reduces even further the many problems associated with denture construction. The simplicity of most of the necessary procedures places them within the scope of the general dentist and emphasis should be placed upon the specific need for this service.

Jack B. Caldwell, D.D.S., M.Sc.
The Texas Dental Journal, February 1954

Gold foil in operative dentistry*

by HERBERT D. COY, D.D.S.,

Director, Dental Clinic, School of Dentistry,
Medical College of Virginia,
Richmond, Virginia.

As we look about us at those who have become proficient in the art of manipulating gold foil, we find all other operations being done with precision. We see men of strong character and convictions with incomes above average. They are not putterers but are constantly busy trying to improve themselves and to use their talents for dentistry's advancement.

The story has been heard of Paderewski, the great pianist, who said, "If I stop practising one day, I notice it. If I stop two days, my friends notice it, and if I stop three days, my public notices it." So, however talented we may be, self-discipline must be practised and we must be master of ourselves and our operations at all times.

May we pause at this point to evaluate our position as individuals. We must determine our responsibilities to our fellow dentists and to the public in general. We should take a greater interest in the programs of our provincial and local societies, and strive to see that gold foil is presented at these meetings in a fair proportion to the other clinical subjects.

It is difficult to obtain full time operative teachers for dental school staffs who have the least conception of a method for teaching the clinical use of gold foil. It is within our scope to try to influence talented young gold foil operators who have had proper instruction, inspiration and background to dedicate themselves to teaching as a life work.

The greatest single influence in my life which compelled me to do better in dentistry was a gold foil study club. I believe many of you will confess to having had the same experience. Out of the gratitude of our hearts and in apprecia-

tion of those who made this possible, we must not only encourage the formation of gold foil study clubs in every section of our country, but we must be willing to teach and demonstrate in these clubs whenever called upon to do so.

The manipulation of gold foil is something that cannot be learned from books. It must be learned, as well as all other good operative dentistry must be learned, from chair-side demonstrations. This means that each must give something of himself in teaching others and he must encourage students in turn, to do likewise.

There are dental schools with great reputations in research and in biological fields where the use of gold foil is no longer taught and where the application of the rubber dam is practically unknown.

We should encourage research and investigations in every department of dentistry but in many schools clinical dentistry is being relegated to a place of secondary importance.

Owing to the scarcity of material in many schools, teachers are being recruited for clinical subjects, not because of any particular qualification in this field but merely to fill the vacancies.

They themselves cannot demonstrate or perform the operations expected of students. This is especially true of gold foil operations and in many cases any other operation requiring the use of the rubber dam.

This situation can be corrected only by encouraging members of gold-foil study groups who are talented in the field of operative dentistry, to accept the responsibility for teaching in operative departments in our educational institutions, whenever the opportunity arises.

It is a basic fact that the level of operative dentistry cannot be raised unless we maintain a high level of talent in the operative department of our dental schools.

Dr. Ernest M. Jones has this to say in

* Read before the American Academy of Gold Foil Operators, Cleveland, Ohio, September 26, 1953.

an article entitled, "Is Gold Foil to Become a Lost Art?"¹ concerning our obligation to the profession and to the public. "The schools, and accordingly the operative staffs, have a serious responsibility to the profession and to the public. Unless a given technique is taught thoroughly and comprehensively, with conviction on the part of the teacher, the student who is the future practitioner will consider the training another hurdle to be forgotten on the day of graduation or as soon as the State Board examinations are completed. One cannot expect the general practitioner to incorporate into his practice a routine technique required of gold foil, unless he has strong convictions regarding its value, and unless he has been convinced by unquestionable evidence of its economy, efficiency and service ability. This requires enthusiastic leadership in school and departmental administration."

Tribute must be paid and full credit given to those men who have pioneered in the use and teaching of gold foil in earlier days. Perhaps we should strive to emulate them in individualism and independence of thought. We must not depend on someone else to think and act for us. If we will study through reading, listening, discussing, observing and thinking we shall be able to determine our personal obligations and discharge them to the best of our ability so that when we next evaluate ourselves we will have the great satisfaction of knowing that we have been a part of the plans and policies of this group for the betterment of the public welfare and that we have been true to our own selves. Are we willing to fight for a cause as were those pioneers who have preceded us or do we want too much security for too little effort? I am reminded of a story which perfectly illustrates this entitled, "No More Cream."

"Unto what then, shall we liken the men and women of this generation? Are they not like unto a certain man who was very fond of his cream, but had no use for cows? Even as a young

lad in the country, he was irked by the thought that there must be so many fields for the grain, so many hands to tend and feed, so much early rising and so much working late, so many tedious chores—all to the end of a cup of cream. Later on, when he was older, he ran away to live in the city. Gradually the memories of his childhood took on the dim form of a foolish dream that is past. One day he came to himself and said, "I shall put away all childish superstitions. Henceforth, I no longer believe in cows! It was a quaint fable that this cream comes from caressing the udders of such mythical monsters. It was part of the luxuriant fancy of a mind undisciplined by reason to believe that so many acres, so many labours, and so much care should go into the making of this liquid. In our modern age of technological advance and of cardboard containers, we do things better and more simply. Obviously, the cream comes out of the carton!" And for many years he continued in this conviction. But there came a time when all the labourers in the country had departed to the city, for they were weary with making and producing, and were content now to settle down to using and consuming. And it came to pass also that there was no longer any cream, for there had ceased to be any cows."

Whether you are working with students or are a practising dentist, you are an example to the younger men studying dentistry and to those just beginning to practice. It behooves us all to uphold the ideals of our profession.

A graduate student must make up his mind, before he encounters the virus of cynicism and the many pitfalls awaiting him, which of the three roads in dentistry he must follow.

We are taking it for granted that he has been well taught and that he has had high ideals and technical dexterity impressed upon him in the school from which he was graduated.

"The first road is very alluring to the one who is interested only in making a financial success and who does not intend to fight for any cause that will disturb him in his pursuit of careless affluence. We find him a prudent, cautious, conservative. On all questions he will follow the course of Pontius Pilate and forego the answer with a sigh and echo the words of John Byron when he said,

"I am content, I do not care,
Wag as it will the world for me."

This man believes in appeasement of whatever powers, good or evil, might otherwise endanger his placid way of life, a drifter with the tide.

The second road does not lead up but down to the perpetual twilight of that narrow valley where men as Coleridge said, "Live like bats and know and feel the philosophy of their age only by its reflections and refractions."

The third road leads uphill through ordeals of sweat, tears and blood. This road is pointed out to us by Emerson when he said, "Tis man's perdition to be safe, when for the truth he ought to die."

But, asks the conscientious and bewildered young man, what is the truth? The truth is in our case that gold foil is superior to all other filling materials in the restoration of lost tooth structure, and we should not sit idly by and see it pushed from the stage of American dentistry.

We cannot hope to influence every one but we can begin by organizing study clubs in which each member is an operator at each meeting as opposed to clubs

made up of just listeners. We must speak out whenever possible in educational circles to strengthen and support a stronger program for gold foil.

"I will open my mind to Humility
That I may remember my debt to those
who have taught me,
And strive to discharge it to those
whom I teach.

Let me be always aware that my days
are short, my work is long,
My talent endures not forever

In Humility may I always build.
I will open my heart to patience,
That those for whom I operate may not
be denied value received
Thru any haste of mine or shallow expediency.

As my art grows in the building of
man's dentistry,
So may my heart grow in the building
of man's happiness
Patiently may I always build.

I will open my hands to artistry,
That I may skillfully work to the health
and protection of man's body,
To the nourishment of his hope, to the
preservation of his culture.
Let my instruments be adroit and ready
weapons in his resistance to decay and
his struggle to survive
With artistry may I always build."

BIBLIOGRAPHY

1. Jones, Ernest M. Is Gold Foil to Become a Lost Art? *Journal of Dental Education*, May 1949.
2. Editorial. *Journal of Dental Education*, Volume 14, page 73. 1950.
3. Coy, Herbert D. Operative Dentistry's Responsibilities. *The Bulletin of the Virginia Dental Association*. February 1953.

Dr. Barner Stross asked the Minister of Food (Gt. Britain) to state the measure of acidity in the mineral drink "Cola" in terms of the hydrogen ion concentration, and what other substances it contained besides caffeine, phosphoric acid, sugar and water. Dr. Charles Hill, the Parliamentary Secretary, told him on January 25, 1954 that the pH of Cola drinks sold in the U.S.A. was 2.6, though a sample taken in this country was slightly less acid. He had no information about the ingredients.

Dr. Stross said the answer showed that the drink was as acid as vinegar even if it were masked by the sugar content. Evidence was given before a U.S. congress committee in 1950 about the danger of this drink in relation to dental nutrition, in that it caused erosion.

ABSTRACTS

A Balanced Educational Program for the Professional Man.

by SHAILER PETERSON

Journal American College of Dentists. Vol. 20, No. 4, December 1953.

The professional man has a multiple role to play in his community life, for he must treat the health problems of the individuals, as well as act as a leader for his neighbors in attacking the problems of their society. The professional man must recognize that his ability and knowledge are not for him to give, but rather, they are the property of the society of which he is a part, and hence, he should feel that it is his duty to be an active participant in his community's affairs. He must realize that a balanced educational program will permit him to serve his patients better and with more understanding, and it will also permit him to accomplish his goal of serving better his community, and his family. The professional man cannot isolate himself in his laboratory, his clinic, or his office if he is to make the best and widest use of his talents, and he must integrate and correlate the knowledge and skill that he acquires by using such things as his understanding of psychology, sociology, and economics both in his professional practice and in his work with the community and at home.

The education of a professional man must be planned to include attention to his training in the theory and principles, and the techniques of his profession; in the ethical standards of his profession, and in the utilization of the scientific

method in attacking and solving problems important to the community and to the nation. The dentist must maintain his enviable position in the community by a planned program of education that will permit him as an undergraduate and as a graduate to obtain the objective of his professional career and the aims of his life in the community. The dentist should utilize fully the unusual training that he has had and the unique ability that he has in attacking both the problems in his clinic, the problems of the community, and the problems dealing with his own philosophy of life and the contributions that he can make to society. The prospective dental student as well as the dentist, should consider that there are three educational periods that are important to him in the planning of his professional career, namely, the preprofessional training with its possible accent on the social science areas and those areas that are not directly related to the scientific training, and the undergraduate and postgraduate training periods in which the cultural training and the social sciences may be effectively combined with the professional courses of study.

Dental schools have a conspicuous obligation to the complete training program of the dentist, by making it possible for him to receive not only the training of a dentist, but also by providing ways and means for him to attack problems that are important to him as a member of society. This is said with the full realization that the dental schools now offer the finest programs in the world and their graduates are second to none. However, even though programs are good and even

"best", one must continue to think of the future and of future demands. It is suggested that the postgraduate programs be expanded in their usefulness and that vehicles of communication be constructed to enable the practising dentist to continue his education while he is still in his office.

Dentistry and those who represent it

will continue to achieve high recognition nationally and in their communities through the services that they are rendering to society and its way of life. This is made possible and will continue to progress through the efforts of the individual dentist and through the efforts of his profession acting through its Association.

The Use of Kutapressin in Exodontics

by DAVID E. HOLTMAN, D.D.S., Ph.B.

*Oral Surgery, Oral Medicine and Oral Pathology,
January 1954.*

Kutapressin is a cutaneous vasoconstrictor substance, isolated from liver extract. In addition to its vasoconstricting power it also reduces the transudation of fluid across the capillary wall, thus reducing edema.

In all operations where Kutapressin is used, 1 c.c. of Kutapressin is administered five to ten minutes prior to the operation, via the subcutaneous route, in the deltoid region of the arm.

Kutapressin has proved effective in the practice of exodontics. As supplementary therapy, it has proved effective in reducing the amount of bleeding at operation, the promotion of a well-formed, firm clot, the reduction of post-operative bleeding, reduction of post-operative pain, and fast wound healing.

The clinical material consisted of 57 unselected office patients. There were 75 operations performed and 117 teeth extracted. The diagnoses leading to extraction were fairly comprehensive.

The anesthetic agent used in the control and experimental group was identical. No antibiotics were used in the experimental group although antibiotics are not contraindicated.

With Kutapressin, bleeding during surgery was reduced and there was faster and firmer clot formation. Sixty-three per cent of the control group experienced poor clot formation, whereas no difficulty was experienced in the experimental group.

The reduction of post-operative pain with the use of Kutapressin was very outstanding. In the control group (without Kutapressin) 87 per cent of the patients complained of pain while in the experimental group (with Kutapressin) only 7.5 per cent complained. This is a reduction of 76.5 per cent. In a group of 12 patients who were operated upon first without Kutapressin and later with the aid of Kutapressin, 91.6 per cent complained of post-operative pain where no Kutapressin was used and only 8.3 per cent complained when Kutapressin was used. This is a reduction of 83.3 per cent in the same group of patients.

None of the patients who received Kutapressin had to have a prescription for an analgesic. In the control group over 60 per cent of the patients complaining of pain required a prescription for an analgesic.

In 12 cases where the patients had one operation without and a second with Kutapressin, it was possible to compare the healing of the two wounds in the same individual. It was noted that healing of sockets was faster with the aid of Kutapressin.

Replantation of Upper Anterior Teeth

by BRUCE L. DOUGLAS, A.B., D.D.S. and WILLIAM DOUGLAS, D.D.S.

Oral Surgery, Oral Medicine and Oral Pathology, January 1954

Replantation of upper incisor teeth is a technique which has been utilized in dental practice for many years. In many instances it has been undertaken in a haphazard manner, either by the patient himself or the dentist, and been successful for varying periods of time. On the basis of the initial premise that simple replacement of the tooth immediately or soon after displacement, with no further treatment, was inadequate, a series of seven patients was encountered and treated over a four and one-half year period. In each instance, the tooth or teeth were displaced traumatically, and replantation was attempted only if the tooth was not fractured or macroscopically injured in any way.

It must be remembered that the conclusions are based on a series of only seven cases, but it is felt that successful replantation of upper central and lateral incisors is definitely possible. Success in this small series coincided with the presence, after the initial loss of the tooth, of an intact labial plate.

The following recommendations are seemingly important in performing the procedure successfully:

1. Be sure the labial plate of bone is intact. If replantation is attempted without it, the prognosis is poor.

2. Treat the tooth in the following manner:

- a) Remove the entire pulpal contents, file the canal as wide as possible, and fill with a well-packed root canal filling.
- b) Perform an apicoectomy to remove as many of the "accessory canals" as possible, lessening the possibilities of reinfection. This also permits the forceful return of the tooth into the socket without exerting undue pressure at the apex and provides a good area of roentgenographic observation in watching regeneration of bone around the tooth.
- c) Fill the canal with adequate root canal filling material.
- d) Sterilize the tooth in a cold sterilization medium for an adequate period; then soak it in isotonic saline solution for at least fifteen minutes.

3. Curette the socket carefully, being sure that all bone spicules or foreign debris are removed.

4. The type of appliance to immobilize the tooth is irrelevant, as long as it serves its function and is functionally and esthetically acceptable to the mouth. The simplest appliance in the hands of the operator seems most advisable.

5. Once the tooth is firmly in place, the occlusion should be adjusted and the patient given adequate home-care instructions.

Union's Prepayment Plan Includes Dental Care

Digest of a Report given by Dr. JOHN D. McNEEL, Medical Director of the St. Louis Labor Health Institute to the Amer. School Health Assoc.

Public Health Reports, February 1954.

Inclusion of dental care as part of a prepayment medical care program and utilizing dentists in private practice is not

only possible and practical, but highly desirable.

A plan was organized in 1945 by the International Teamsters Union, Local No. 688, of St. Louis, for the benefit of eligible members and their dependents—15,000 persons. In the plan the department of dentistry has been accepted as a medical specialty, and the dentists attend the staff meetings and participate in the administrative conferences.

Full dental care is stressed. In addition to emergency dentistry, the member is encouraged to make an appointment for complete dental X-rays and a thorough clinical examination of the teeth and the buccal cavity.

Subsequent appointments are made for complete prophylaxis, fillings, extractions, reconstruction of bridges or dentures, or other services. On completion, the patient is instructed on proper prophylaxis or other personal care required.

All types of dental treatment are prepaid under the plan, except that the member must pay the laboratory fee for bridges and partial or full dentures. He must also assume the expense for orthodontic treatment, but arrangements are made for such care with qualified specialists in the community.

Ten dentists, who maintain private practice, are employed on a part-time schedule and are paid a flat hourly rate. The system of part-time dentists has been so satisfactory that there has been relatively little turnover of dental personnel since the initiation of the dental care department. Each dentist is also assigned a dental assistant.

A fee-for-service system of payment would present problems in arriving at a fee schedule and would be prohibitively expensive budget-wise. The flat hourly fee places no premium on the amount of work done or the number of patients seen. Physicians and dentists perform at widely varying rates, and requiring dentists to see the same number of patients in a given hourly schedule might cause a decline in the quality of care.

Private dental laboratories are used by the plan, since the employment of technicians skilled in special procedures would be prohibitively costly and the cost of equipping and maintenance of a dental laboratory would be sizable.

Of the approximately 15,000 persons eligible for dental service, 9,389 availed themselves of this service at least once during 1952.

The total cost of the dental department in 1952 was \$129,299. Of this sum \$110,286 was paid by the Labor Health Institute and \$19,013 was paid by the participant for outside laboratory fees. The costs per dental participant per year was \$9.39, but the cost per dental patient per year was \$13.77, making the cost per prepayment family \$2.35 per month.

Prominent Rugae and Glossy Tongue Surface

by LUZERNE G. JORDAN, D.D.S.

Journal of Prosthetic Dentistry, January 1954.

The tongue is an extremely sensitive organ, and it is necessary that the dentists give serious thought to the nature of the environment in which the tongue must function when artificial dentures, either full or partial, are being worn.

Of the many factors which influence the tongue environment in the presence of artificial dentures, two are of utmost importance: the nature of the finish of the tongue surface of the appliance, and the

development of properly located rugae, when they are to be used.

A matte, or nonglossy surface, on upper dentures especially, is much more acceptable to patients than a glossy surface.

The matte surface not only improves tongue comfort, but also aids materially in phonetics because the tongue is able to obtain a degree of traction on the denture surface, which is similar to that obtained when the tongue is rubbed against the mucosa.

The presence of prominent artificial rugae on the tongue surface of upper dentures is often more detrimental than beneficial, especially to phonetics.

If, after the patient has worn a denture,

it is decided that some evidence of rugae would improve phonetics, the effect is obtained by carving interrugae grooves on the tongue surface of the denture over the areas where the grooves exist in the mouth.

The basal surface of the denture is dried, and molten black carding wax is deposited in the grooves representing the natural rugae. With the basal surface of the denture facing a bright light, the black wax,

representing the natural rugae, may easily be seen.

Suitable grooves are carved between the dark shadows with a round bur, and are then smoothed with pumice on a small felt cone.

By this method any desired irregularities on the tongue surface of the denture will be located exactly over similar irregularities on the mucosa.

Therapeutic Dentifrices.

Summary by THOS. J. HILL of Panel Discussion

Journal of the American Dental Association, January 1954.

There is some evidence that the bacteria flora of the mouth can be affected or influenced by the incorporation of various substances within dentifrices. It is not definitely established that the effect on the bacterial flora is of a permanent nature, nor is it definitely established that dentifrices as used by the public materially decrease the dental caries rate because of any specific therapeutic substance incorporated in them. It would appear that the present advertising claims of dentifrices are inclined to lead the public to put too much faith in some incorporated ingredient rather than on the prophylactic value of the dentifrice.

In the final analysis, therapeutic dentifrices are attempts to prevent disease by the constant use of drugs. This is not the usual way to control diseases. His-

torically, success in the control of various diseases has been by eradication of the specific causative organisms, by the elimination of their carriers, or by raising the resistance or immunity of the host to the organism causing the disease.

All methods which depend on the constant use of drugs, regardless of their effective value, must be considered substitutes for a better understanding of resistance and susceptibility, for a better understanding of the host-parasite relationship which makes these diseases possible.

With the exception of the use of fluorides, all the methods that have been advocated for dental caries control depend in part or in a large measure on the cooperation of the patient. It would appear, then, that any method to control dental caries must be not only sound in theory and demonstrable by clinical investigation but must be practical in office manipulation and effective under the common or usual conditions of use.

Orthodontics, a specialty of dentistry, has been accepted as a profession, indeed—in many quarters, as one of the "learned professions." As in the case of any new and growing endeavor this acceptance has been given on faith but it will not continue to be given indefinitely unless it is deserved. In the long run, orthodontics will be exactly what we make it. If it is devoid of a vital awareness of its responsibilities to society and an active concern with the problems of meeting its obligations, it then, rightly, becomes a trade. The first important and basic decision we must make, however, is whether we want orthodontics to be a profession or a trade. If we are content to let it become a trade, much of what I have to say is of no concern. If we want to maintain orthodontics as a profession and increase its stature, we must face a number of problems and arrive at sound basic decisions. These problems include (1) the relationship of orthodontics to world and national affairs; (2) the responsibilities of orthodontics to society; (3) the responsibilities of the orthodontist as a professional man to his profession; (4) the responsibilities of the orthodontist in the recruitment and education of new members of his group.

Amer. Journal of Orthodontics, May 1953. (Dental Items of Interest, September 1953)

RESEARCH

FOREFRONT OF CANADIAN DENTISTRY

Demineralization of hard tissues by organic chelating agents at neutral pH.

by GORDON NIKIFORUK and LEO SREEBNEY (Division of Dental Research, Faculty of Dentistry, University of Toronto and the Department of Applied Materia Medica and Therapeutics, College of Dentistry, University of Illinois, Chicago)

Journal of Dental Research 32(6):859, 1953

A new method for demineralizing hard tissues at neutral pH's has been developed. This method employs a chelating agent, ethylenediamine tetracetic acid (Edta), which has the ability to complex ionic calcium at neutral or alkaline pH's.

Experimental findings indicate that 500 ML. of a 0.5 M solution; pH 7 to 8; is suitable for demineralizing hard tissue specimens weighing approximately one gram. The calcium complex formed is stable over a wide range of temperature. Increase of temperature speeds

demineralization markedly. Specimens should be suspended near the top of the liquid column. The complex-containing solution, having a higher density, sinks, bringing about an automatic circulation and renovation of the reagent. Edta solutions have approximately one-seventh the velocity of demineralization possessed by acid solutions and are about seven times as fast as any existing neutral solution (magnesium citrate) used for demineralization of hard tissues.

The use of Edta for demineralization purposes should prove useful in histochemical, chemical and histologic studies of small specimens of calcified tissues. The action of Edta solutions is very mild as contrasted with acid solutions. The protein fraction is not as easily destroyed and the development of CO₂ bubbles is prevented. This suggests that enamel protein may be more easily preserved and recovered by demineralizing with Edta than by using previously described methods.

Ameloblastoma in a three year old male

by H. A. HUNTER and G. NIKIFORUK

Oral Surgery, Oral Medicine and Oral Pathology (In press)

This case report is noteworthy because of the age of the patient and some interesting histological features. The patient gave a history of a hard mass in the body

of the right mandible shortly after birth. At the time of surgery it extended from the second primary molar forward to the lateral incisor area. The mass was identified as an ameloblastoma. Microscopically the tumor had a single layer of ameloblast-like cells over a loose connective tissue core. Histological signs of the specific cellular function of amelogenesis by the ameloblasts was shown, in the polarization of these cells; by the thickening of

the basement membrane; and by the widespread occurrence of a layer of vacuoles just beneath the secretory end of the ameloblasts, but in no instance was any enamel matrix formed. The polarization brought up another point; i.e. where was the growth taking place since specialized function prevents growth? An hypo-

thesis for the absence of enamel in the above ameloblastoma was formed—the neoplastic ameloblasts were unable to incite the differentiation of odontoblasts from the periphery of the adjacent mesenchyme which in turn precluded any of the succeeding stages of amelogenesis.

Staining reactions following demineralization of hard tissues by chelating and other decalcifying agents.

by H. A. HUNTER and G. NIKIFORUK

Journal of Dental Research (In press)

Because of the limited number of techniques available for decalcifying hard tissues at alkaline pH's the study was planned to observe the effects of using one of the chelating agents—ethylene diamine tetraacetic acid as a decalcifying medium, and to compare the effects with those of conventional acidulated solutions on the staining reactions of tooth and bone tissues following the use of haematoxylin and eosin. The experiment was in four phases: to study the differences, if

any, in concentration of the solution from 0.2 — 0.7 molar; in the pH over a range from 6.0 — 12.0, in temperature from 4°C. to 60°C. and, finally, a comparison with six acid solutions. The results showed that the stronger the solutions, the shorter was the time of decalcification, and that the rate of decalcification was retarded as the pH was increased. Increasing the temperature of the solution reduced the time of decalcification. Compared with acid solutions, the chelating agent took at least twice as long to decalcify a given specimen. In respect to staining, neither the concentration, the pH, nor the temperature had any adverse effect. The chelating agent gave results that were equal to and in most instances better than those when using conventional acid solutions.

Chalky enamel was found to contain consistently three to four times as much organic matter as the adjacent sound enamel, in a series of ten assorted teeth. Pooled chalky enamel samples contained 2.1 per cent organic matter, as against 1.4-1.7 per cent in the above series. Another type of chalky material lining the enamel which overhangs advanced dentine caries contained 4.4-7.0 per cent.

Maurice V. Stack, M.Sc., Ph.D.
British Dental Journal, Feb. 16. 1954.

Seventeen patients suffering from aphthous ulcers were treated topically with hydrocortisone ointment, 1 per cent and 2.5 per cent. Fifteen of these patients responded promptly to this therapy, regardless of the concentration of the hormone. Hydrocortisone acetate in an ointment base, applied topically, has been used with encouraging results for a condition which has proved refractory to most other therapeutic agents.

Sol A. Bergman, B.A., D.D.S.
"Dental Digest", February 1954.



THE ALGONQUIN HOTEL — SAINT ANDREWS-BY-THE-SEA

Picturesquely situated on a point of land reaching into the Passamaquoddy Bay in Southwestern New Brunswick, is Saint Andrews-by-the-Sea, a premier summer resort of Canada. Here awaits an opportunity to enjoy the Canadian Dental Association Annual Convention in pleasant vacation surroundings with your headquarters at the comfortable C.P.R. Algonquin Hotel.

JOINT MEETING

THE CANADIAN DENTAL ASSOCIATION

NEW BRUNSWICK DENTAL SOCIETY

SEPTEMBER 5, 6, 7, 8, 1954

Cheques or money orders for registration fee of \$15.00 should be made payable to the New Brunswick Dental Society and mailed to Dr. S. K. Wetmore, Joint Convention Committee Secretary, 147 Germain Street, Saint John, N.B., together with applications for hotel reservations.

DOWN TO THE SHORE IN FIFTY-FOUR

EDITORIAL

Dental Representation on Local Boards of Health

Local Boards of Health, by the soundness of their judgment and the initiative of their decisions, are important agencies for the welfare of the people they represent. The majority of the Boards of Health in Canada are comprised of some of the elected members of the local council as well as certain others appointed by that governing body. In most instances only the elected members have voting privileges. This is probably desirable in view of the fact that this board, through the medium of the franchise, can receive either the approbation or the censure of the people to whom it is responsible.

The medical officer of health is an *ex officio* member of the Board of Health and if the community in question is of sufficient size to support a local medical society, then a member of that organization is usually asked to contribute to the deliberations of the Board.

In view of the highly specialized field of public health and the importance of trained personnel to render sound advice, it would be almost impossible for Boards of Health to function without the aforementioned medical guidance. It is to the credit of many local medical societies that representatives of their membership serve so faithfully and well upon these Boards.

Dental public health activities form a portion of the general health programme of most communities. While it is granted that the dental health officer is responsible to the medical officer of health for a particular Health Unit, and that the medical officer of health can propose to the Board a dental health programme originally planned by the dental officer, it does seem that the cause could be better served by one with training and experience in the dental field.

In view of the fact, that dental disorders eventually affect adversely almost one hundred per cent of our population, it does seem appropriate, as well, to have representation from the local dental society so that planned dental health programmes could be integrated into the whole picture of dental practice in the area in question. Any dental public health programme, to be successful, must of necessity receive the unqualified endorsement and active support of the individuals who must ultimately provide the service. It would be to the benefit of the community to have one versed in the prevention and treatment of dental disorders, serve upon its Board of Health.

In a Canadian city recently when the subject of fluoridation was brought to a committee of the Council following repeated endorsement from the Board of Health, the residents were treated to the ludicrous performance of a chairman distributing pamphlets written in opposition to fluoridation by a reporter from a local newspaper for the "Committee members to study and become informed". One cannot help but think that had a responsible representative of the dental profession been in a position to contribute to the subject, a much superior source of information could have been provided.

Fluoridation, of course, is but one of many public health matters to which the dentist could give sound direction. The whole field of dental public health is an open vista for constructive thoughts and suggestions. It would seem that a local dental society is in a preferred position in respect to the dental health problems of its own area. The society, through its liaison on the Board of Health, could undoubtedly be of inestimable value in the initiation and promotion of sound dental public health activities.

Book Review

The Faber Medical Dictionary. Edited by Sir Cecil Wakeley, Bt. Published by Faber & Faber, 24 Russell Square, London, England. Pages: 471. Price: \$9.00.

This is an attractively prepared, well printed English medical dictionary which should be of value to any who may require rather brief explanations of medical terms. The dictionary is valuable in Canada because spellings based on the Oxford dictionary are used. In almost all cases the source of the word indicated is given, as well as the English meaning of the source word.

In respect to dental terminology the dictionary is no more than adequate, and in some instances the definitions are almost without meaning, at least in this country. The term periodontium, for

instance, is defined as "the membrane lining the cement of a tooth, the periodontal membrane", while our interpretation of the term would be "the investing and supporting tissues surrounding the tooth, namely the gingiva, periodontal membrane, and alveolar bone."

The word orthodontia is said to mean "the correction of irregularities in the teeth"; our terminology perhaps would indicate that orthodontia is "that branch of the practice of dentistry which deals with the prevention and correction of irregularities of teeth and malocclusion".

The terms prosthodontics, paedodontics and radiodontics are not given at all.

This text undoubtedly has value as a general medical dictionary and a source of derivations of medical terms, but lacks any real value as a lexicon of dental terminology. W.J.D.

The Association

Students' Register, 1953-54

Following will be found the tables making up the Annual Dental Students' Register for the year 1953-54.

Pertinent Facts of Interest

- 1. The number of students in Canadian Dental Schools is 707 which is the lowest number since 1945-46. (See Table III)
- 2. The number of graduates from Canadian Dental Schools last year was 178. The average number for the past 14 years is 163. (See Table IV)
- 3. The provincial ratio of students to

population apparently bears little relationship to the existence of a dental school in the province. (See Table VII)

- 4. The American Dental Association reports 41 students from Canada in attendance at U.S. Dental Schools. For preceding years the great majority of these students were listed as attending U.S. Dental Schools on the west coast and it was taken for granted that they originated from the province of British Columbia. For this year approximately 50% of these Canadian students are attending American Dental Schools other than those on the west coast. Counter-balancing this factor there are 27 students from the United States attending Canadian Dental Schools.

TABLE 1
Total Enrolment of Undergraduate Students in the Dental Schools of Canada as of January 2nd, 1954

University	Freshmen	Sophomores	Juniors	Seniors	Men	Women	Total
Dalhousie University.....	12	12	12	14	47	3	50
McGill University.....	32	37	36	37	142	—	142
University of Montreal.....	43	17	18	20	97	1	98
University of Toronto.....	77	80	72	70	284	15	299
University of Alberta.....	30	27	28	33	116	2	118
Totals.....	194	173	166	174	686	21	707

TABLE 2

Maximum Number of Undergraduate Students that will be Accepted in a Class in Canadian Dental Faculties

Dalhousie University.....	12
McGill University.....	35
University of Montreal.....	60
University of Toronto.....	65
University of Alberta.....	30
Total.....	202

TABLE 3

Recapitulation of Undergraduate Enrolment in the Dental Schools of Canada 1940-1953 Inclusive

School	Dalhousie University	McGill University	University of Montreal	University of Toronto	University of Alberta	Total
1940-1941.....	31	58	104	210	51	454
1941-1942.....	25	61	118	232	49	485
1942-1943.....	25	67	139	270	53	554
1943-1944.....	22	67	154	255	24	522
1944-1945.....	28	51	162	264	34	539
1945-1946.....	27	73	184	180	54	518
1946-1947.....	38	111	188	340	108	785
1947-1948.....	37	127	208	435	115	922
1948-1949.....	41	146	224	478	123	1012
1949-1950.....	48	147	225	478	136	1034
1950-1951.....	48	145	196	380	114	883
1951-1952.....	49	145	140	300	121	755
1952-1953.....	50	141	111	294	123	719
1953-1954.....	50	142	98	299	118	707

TABLE 4

Total Number of Graduates During the Years 1940-1953 Inclusive

School	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953
Dalhousie University...	12	7	8	11	6	8	0	10	9	6	11	12	12	14
McGill University...	13	18	9	26	12	13	5	18	15	34	36	37	36	34
University of Montreal...	23	14	31	18	37	30	41	36	38	45	42	69	55	20
University of Toronto...	56	45	40	103	61	58	56	75	24	75	168	152	85	75
University of Alberta.....	13	13	32	8	24	7	0	10	13	20	49	25	27	35
Totals.....	117	97	120	166	140	116	102	149	99	180	306	295	215	178

For the Year 1953

	Male	Female
Dalhousie University.....	13	1
McGill University.....	34	0
University of Montreal.....	20	0
University of Toronto.....	73	2
University of Alberta.....	34	1
	174	4

TABLE 5

Distribution of Undergraduate Students by Provinces and Foreign Countries in the Dental Schools of Canada as of January 2nd, 1954

School	Newfoundland	P.E.I.	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	United States	Hong Kong	British West Indies	Bermuda	Nigeria	Europe	Puerto Rico	Australia	Great Britain	Totals
Dalhousie University.	7	2	28	10						1	1							1		50
McGill University.	3	2	1	6	65	15	5	5	2	6	21		6	3		1	1			142
University of Montreal.			1	2	84		1	2			5					3				98
University of Toronto.	1	4		3	1	256	9	8		12								4	1	299
University of Alberta.							3	36	55	16		1	1		1	4			1	118
Totals.....	11	8	30	21	150	271	18	51	57	35	27	1	7	3	1	8	1	5	2	707

TABLE 6

Additional Students

	Dalhousie University	McGill University	University of Montreal	University of Toronto	University of Alberta	Totals
*Graduate during 1953-54.....	0	0	0	16	0	16
**Post-graduate during 1953-54....	0	0	7	4	0	11
***Occasional during 1953-54.....	0	0	95	3	0	98
Student Dental Hygienists 1953-54	0	0	0	15	0	15

*The term "graduate" means those dental graduates registered in the Graduate School of a University, proceeding to a degree.

**The term "post-graduate" means those dental graduates registered in a Dental Faculty, proceeding to a degree or diploma.

***The term "occasional" means those dental graduates registered in a Dental Faculty, for courses of long or short duration, but not proceeding to a degree or diploma.

TABLE 7

Computed Data Respecting Relationship by Percentage and Ratio to Population per Province of Origin of Canadian Students Attending Canadian Dental Schools

Students From	Percentage of Students	*Ratio of Students to Population
Newfoundland.....	1.55	1/34,818
Prince Edward Island.....	1.13	1/13,250
Nova Scotia.....	4.24	1/22,100
New Brunswick.....	2.97	1/25,524
Quebec.....	21.22	1/28,460
Ontario.....	38.33	1/18,070
Manitoba.....	2.54	1/44,944
Saskatchewan.....	7.21	1/16,882
Alberta.....	8.06	1/17,579
British Columbia.....	4.95	1/35,143
Canada.....		1/20,907

*Population figures used are estimates as supplied by the Dominion Bureau of Statistics as of June, 1953.

Note: Forty-one Canadian students are attending schools in the United States this year but as it is impossible to determine the provinces from which they originate in Canada they cannot be included in this table.

TABLE 8
Number of Qualified Applicants for Dental Course

University	1945 Apps	1946 Apps	1947 Apps	1948 Apps	1949 Apps	1950 Apps	1951 Apps	1952 Apps	1953 Apps
Alberta.	26	59	27	44	50	45	37	40	45
Toronto.	251	?	?	410	290	239	223	206	243
McGill.	87	104	190	165	142	124	118	50	50
Montreal.	157	108	137	135	140	112	72	107	93
Dalhousie.	?	?	?	?	?	?	?	25	20

Note: The figures given in this table are not to be interpreted as accurate but rather as comparative indices from year to year. The basis of considering applicants varies from school to school and consequently the figure submitted by one school is obtained by a different method than for another school.

The Library

The Library of the Association consists of practically all the books related to dentistry which have been published during the last ten years. A considerable number of volumes published earlier are also available.

The Library has been made possible through the generosity of interested members of the Association. All monies received are used for the purchase of books. The Association bears the cost of administration.

For the benefit of members and all others interested, the library is open daily from 9.00 a.m. to 5.00 p.m. except Saturdays and Sundays. All dental periodicals are available.

Books may be borrowed by the membership by writing: Librarian, Canadian Dental Association, 234 St. George St., Toronto.

Additions

- ANDERSON, W. A. D. Synopsis of pathology. 3rd ed. 1952. 788p. illus.
BOLL, M. Physique appliquée à l'art dentaire. 1952. 308p. illus.
BOYD, W. Textbook of pathology. 6th ed. 1953. 1024p. illus.
CHILTON, N. W. Analysis in dental research. 1953. 216p.
CHOKSEY, K. M. Dentistry in Ancient India. 1953. 85p. illus.
GREAT BRITAIN. Handbook for Royal Naval Dental Surgery Attendants. 1949. 146p. illus.
HAM, A. W., Histology. 2nd ed. 1953. 866p. illus.
HARTSOOK, J. T., and WILBUR, H. M. Dentistry for children. A postgraduate course in dentistry for children. 1947. 75p. illus.
HORSLEY, G. W., and BIGGER, I. Operative surgery. Two volumes. 6th ed. 1953. 1579p. illus.

- LEDERLE, Labs. The nutritional and clinical significance of folic acid. 1950. 121p.
MONTGOMERY, G. L. Pathology for students of dentistry. 1953. 305p. illus.
NACHMANSOHN, D. ed. Nerve impulse. Transactions of the first Conference on problems of nerve impulse. 1950. New York. 159p. illus.
ORBAN, B. ed. Oral histology and embryology. 3rd ed. 1953. 364p. illus.
PRATT, R., and DUFRENOY, J. Antibiotics. 2nd ed. 1953. 398p. illus.
SCHOUR, I. Noyes' oral histology and embryology. 7th ed. 1953. 448p. illus.
SMILEY, D., and GOULD, A. G. Your community's health. 1952. 454p. illus.
STRENGER, F. Biting force in man; measurements under conditions of physiological free way space between the teeth. 1949. 90p. illus.

The Corps

The Royal Canadian Dental Corps flag is now flown in Korea by No. 25 Canadian Field Dental Unit.

It is 3 ft. by 2 ft. and is bisected diagonally from the upper left or flagstaff corner, to

the lower right corner, with the upper triangle emerald green and the lower triangle blue.

The design of the corps cap badge in gold, 12 inches high, appears in the centre of the flag.

Capt. D. H. Protheroe has been posted to No. 25 Canadian Field Dental Unit in Korea.

Economic Security

Some Pitfalls of Health and Accident Insurance

by E. I. R. WILLIAMSON, M.B.E., B.P.A., F.R.E.S.,

Consulting Economist, and Administrator
of the C.D.A. Plan

The multiplicity of types of Health and Accident contracts—as many as fifty to sixty within a single company—and the great variation in benefits which they provide in the same circumstances, makes an understanding of at least the major pitfalls of the greatest importance to the professionally practising dentist since his income is dependent upon his personal ability to continue to practise, and its complete cessation in the event of disability.

These pitfalls may be classed under two general headings:

1. Limitations of Access to Benefits
2. Limitations of the Benefits, in both amount and duration.

This article will deal with Limitations of Access.

The most important limitation is "*Renewable at the Option of the Insurer*" (the Company). In other words—the right of the company to cancel the contract. "Statutory Condition No. 9" governs. Cancellation frequently is on notice of so many days, or it may be restricted to the next renewal date, or it may be when the group as a whole is cancelled. But the essential fact is that it is within the legal right of the insuring company—regardless of the length of time the contract has been in force—to "get off the hook", whenever it feels that it is necessary or desirable to do so.

Since such cancellations are made only when the company, on the basis of past experience, feels that there will be substantial claims arising from either the individual or the group in the near future, it is obvious that the individual always, and most of the members of the group,

will be, as a result, "uninsurable", and that the cancelled contract cannot be replaced from any source at any price. The cancelled individuals thus are left without any protection at the time when it is most needed.

Very closely akin to cancellation, although some companies attempt to make a distinction, is refusal to *renew* the contract. The contract may state—although the various departments of insurance are endeavouring to halt the practice—that it is "Non-cancellable throughout any period for which the renewal premium already has been accepted, but reserve the right of the company to refuse to accept the next annual or semi-annual premium, as the case may be. The reasons for refusal to renew, of course, are the same as for outright cancellation.

If renewal is accepted, it may be on condition that in the future any cardiac condition, or respiratory condition, or other type of illness on which a claim has been paid, is henceforth excluded from coverage. It will be obvious that once such a condition has been experienced, the probability of recurrence of that same trouble is greater than the incidence of some entirely new condition.

A further variant is that on a renewal date, a very substantial increased premium may be required on that and all subsequent renewal dates. If the increase in the premium is sufficient, it is, of course, tantamount to cancellation.

Of a somewhat similar nature is the interpretation which may be given to "pre-existing conditions". It will be obvious that a pre-existing condition is and must be excluded from any and every insurance contract because payment of indemnity for such would merely invite deferment of entering into a contract until the immediate need for payment of disability indemnity had arrived. It is possible for the company to disclaim obligation to pay indemnity on the grounds of a "pre-existing condition", even though the contract has been in force for many years. The only protec-

tion against this is an "Incontestability Clause" which bars the company from claiming that any illness is the result of a pre-existing condition after the contract has been in force for two years.

In connection with disability through accident, the insuring clause may read "accidental bodily injury" — or — "bodily injury caused by accidental means". This may appear to be a mere playing with words, but while the former phraseology is satisfactory, the latter can exclude virtually any injury which the insured may suffer through an act of his own—e.g., loss of an eye while fly-casting would be covered under the first clause, but not under the second.

Also in connection with disability through accident is a limitation as to the length of time — say 20 days — within which disability must commence following the accident. Temporarily hidden injuries and delayed reactions—which are very frequent—are thereby entirely excluded from cover—though they may later result in prolonged disability, even dismemberment or loss of sight.

If a contract specifies particular forms of accident or illness for which indemnity will be paid, this is in fact an extremely dangerous limitation of Access to Benefits, since often such a schedule omits or may be construed to omit, some of the most

common diseases or forms of accident. The only safety lies in a definition which makes a company liable on the sole condition of inability to perform his professional duties.

Finally, the contract may specify that the company has no liability unless the insured is "totally and permanently prevented from performing any and every means of gainful occupation". For a professional man this is particularly serious as it may be contended that he is capable of performing some relatively menial occupation for which he is totally unsuited in training, temperament, and standard of living.

The practising dentist must, therefore, ensure that his disability contract is completely Non-cancellable and Guaranteed Renewable, individually and collectively, that payment of Benefits is conditional only on inability to perform the duties of his profession, and that eligibility is not denied, either from the length of time between cause and effect, or because of the nature of the cause.

In the following article, we shall deal with further pitfalls of H. and A. insurance concerning Limitations of Duration and Amount of Benefits.

EDITOR'S NOTE: Members of the C.D.A. having specific problems, or desiring to obtain precise information, are invited to submit questions to the Editor's Office.

Committees and Councils

Legislation

By the terms of reference of the Committee on Legislation, the Committee is expected chiefly to hold a watching brief over all matters of legislation affecting the practice of dentistry in Canada. Last year in five of the provinces important matters of legislation concerning the practice of dentistry came before the legislatures or before committees of the same.

In Newfoundland an act to amend the Dental Act was passed by the House of Assembly. It gives the government power to take over all the functions of the Dental Board in case the Board should resign and thus to continue the administration of the dental profession. This action was precipitated by a case in which a Latvian dentist had applied for permission to practise in Newfoundland and had been refused by the Board, but was subsequently granted permission by the over-riding authority of the government.

In Prince Edward Island a new Dental

Act was introduced and became law in the provincial legislature. One objection to the bill came in a discussion on the points of a large registration fee being required for registration of dentists from outside the province. A compromise was arrived at on this point and an average fee, in line with that of other provinces, was set. Two important additions are the requirement of Canadian citizenship for registration, and the six months' clause for action for negligence or malpractice.

In New Brunswick the profession in the province was successful in having a new Dental Act passed by the legislature to succeed the 1942 Act. Several improvements to strengthen and regulate the practice of dentistry were incorporated in the new bill. Four points were emphasized as important in the draft:

- a) A proper definition of dentistry is very necessary in obtaining prosecutions
- b) Dental hygienists' regulations
- c) Prescription law for dealing with dental technicians
- d) "Space of time" clause for action for negligence or malpractice.

In Ontario the by-laws were amended as follows:

- a) To recognize the certificate of the National Dental Examining Board of Canada, and
- b) To permit the employment of Dental Hygienists in Health Units, etc., when under the supervision and control of a legally qualified dentist.

In Manitoba an attempt to have a "Prescription" clause added to the Dental Act was turned down in Committee before reaching the legislature. A proposed Dental Technicians' Act met a similar fate.

The College of Dental Surgeons of British Columbia was successful in its efforts to stop in Committee of Legislature "an Act respecting Dental Technicians". If this act had been allowed to become law, dental technicians in the province would have been given authority to deal directly with the public in supplying artificial dentures. It is not thought, however, that this problem has been entirely solved. Situations will arise and the illegal practice of dentistry will need careful study.

The Provinces

Alberta

The February meeting of the **Central Alberta Dental Society** was held in the Blue Room of the Royal Cafe, Red Deer, on Wednesday, February 24th, with members present from many out-of-town points.

The society welcomed Capt. J. Craig, Dental Officer with the R.C.A.F. station, Penhold, as a new member.

Dr. C. D. Husband outlined a program for Dental Health Week and suggested the appointment of one dentist to be responsible for publicity in each town.

The guest speaker was Mr. James Graham, Calgary, who spoke on the importance of drawing up wills. His talk was well received by the members.

L. K. B.

The annual Ladies' Night of the **Edmonton and District Dental Society** took place

on Friday, February 19th, in the main ballroom of the Macdonald Hotel. The President, Dr. William Orobko and Mrs. Orobko received the guests.

The city of Edmonton was represented by Alderman and Mrs. A. Miller; the Academy of Medicine by Dr. H. MacLennan; and Dr. G. M. Little, City Medical Health Officer, and Mrs. Little were also present, along with Dr. A. Urschel, President of the Central Alberta Dental Society, and Mrs. Urschel.

Dr. J. E. Young was in charge of the arrangements.

A meeting of the **Edmonton and District Dental Society** was held on February 23rd in honour of Dr. A. J. Coughlan, President of the Canadian Dental Association, and Dr. Don W. Gullett, Secretary. Dr. Coughlan was introduced by Dr. Arthur Rooney, a former Canadian Dental Association President. Also present at the meeting was Dr. H. F. Whittaker, President of the Association in 1920-1922.



EDMONTON AND DISTRICT DENTAL SOCIETY MEETING—FEBRUARY 23rd, 1954.

Back row, l. to r. Dr. H. R. MacLean, Edmonton, Immediate Past-President of the Alberta Dental Association, Dr. Don W. Gullett, Secretary, Canadian Dental Association, Dr. William Orobko, President of the Edmonton and District Dental Society.

Front row, l. to r. Dr. Art Rooney, Edmonton, President of the Canadian Dental Association 1943-44, Dr. A. J. Coughlan, President, Canadian Dental Association, and Dr. H. F. Whittaker, Edmonton, President of the Canadian Dental Association 1920-22.

Five Honorary Life Members of the Society were also in attendance.

The meeting unanimously passed the following resolution: that it is in the interests of public welfare that all Health Services expenses be totally income tax deductible.

B. M.

Saskatchewan

Progress of the **Children's Preventive Dental Programme** was the subject at the first meeting of a professional advisory committee held recently at the regional health centre in Assiniboia. Drs. R. G. N. Brown and W. McKay of Assiniboia, D. Boudreau of Gravelbourg and R. Taillon of Willow Bunch, represented the private dentists of the district.

Dr. M. K. Dehnel, regional health officer,

pointed out that the dental health of children under the Programme had improved considerably. This, he said, was partly due to private dentists who had been interested in the Programme since it began in 1950. He also stressed the value of dental hygienists in such a programme.

Dr. A. Lizaire, regional dentist, outlining the professional aspects of the Programme, said a friendly relationship between the dentist and his young patients must first be established, and that time was required to educate them and their parents of the necessity for sound dental habits and prompt attention to defects.

The annual visit of the President and Secretary of the Canadian Dental Association to the various Societies across Canada is of immense value to the profession.

With the visit of the new President each

year there is injected into the profession the inspiration and enthusiasm that accompanies new officers. The President gives to the Association the value of his successful professional experience. To our President, Dr. Coughlan and his predecessors, we as a profession are profoundly indebted. These men always sacrifice their own interests in order to contribute valuable service to the profession. They guide our destiny.

To our Secretary, Dr. Gullett, we owe a debt of gratitude. We are very fortunate in having in our profession a man so capable, and a man with vision, who is willing to serve in this capacity. Dr. Gullett always accompanies the President on his Trans Canada visits and has aided immensely to mould our profession into its present status. His travels to the various meetings in Europe and in the States has enabled him to grasp the problems confronting world Dentistry and to direct us along a high standard of service. We have learned to appreciate his sound professional judgment.

—L.D.H.

The Hon. T. J. Bentley, Minister of Public Health for Saskatchewan, has reaffirmed his Department's statement made in 1951 favouring fluoridation of water supplies. The conclusion of Dr. Bentley's statement is as follows: "Viewed in the light of the great need for prevention of dental decay, the volume of evidence of the efficiency of fluoridation in accomplishing a major reduction in dental decay, and the flimsy and hypothetical campaign conducted in opposition, the Department endorses the procedure which, if adopted, will no longer deny to large numbers of children the benefits of better dental health which will result. There is no doubt that the incidence of dental decay in children can be reduced by almost two-thirds. There is abundant valid evidence as well that harmful effects will not result from the introduction of the recommended amounts of fluoride into a water supply which is deficient in this necessary and valuable element."

Quebec

The second general meeting of the **Mount Royal Dental Society** for the 1953-54 season was held in the form of a full day clinic. The clinician was Dr. Michael Cohen, of Boston, Fellow of the American Academy of Pedodontia and a well-known authority in that field.

The morning session consisted of a lecture with illustrating slides on "Factors of Growth and Occlusion". Dr. Cohen stated

that "teeth and jaws develop independently of each other", and showed that edentulous jaws will develop to normal size, in the absence of disease, almost as if they had a full complement of teeth, as proved by cephalometric and caliper measurements on a number of edentulous children over a period of several years.

The necessary intermaxillary height is created 1) by the downward growth of the temporal bone, creating the space for the deciduous teeth, and 2) the downward growth of the mandible, providing room for the permanent dentition. The antero-posterior growth of the face provides space for the eruption of the first permanent molars. Treatment in such cases of anodontia consists of the construction of dentures, where this can be done without opening the vertical dimension. Dr. Cohen showed slides of such a case. He went on to show slides of prognathous cases, and stressed the importance of the family background in prognathous children before treatment, since prognathism often is due to a genetic factor. The next case illustrated was one of pituitary dwarfism, showing a full complement of teeth but dwarfism of all skeletal structures. Some deciduous teeth were extracted to see whether, under therapy with anterior pituitary extract, methyl testosterone and thyroid, the permanent teeth would erupt sooner, since retarded eruption of teeth is one of the sequelae of pituitary dwarfism, the teeth being of normal size but being crowded into dwarfed jaws. Extraction of the deciduous teeth at the opportune time, as shown by radiographs, would be indicated. In a survey of 700 pre-school children Dr. Cohen found that there was:

1) Not too much genetic malocclusion but 2) 25% had some oral habit such as thumb sucking, etc., and Dr. Cohen pointed out that these cases could not all be psychosomatic problems or unhappy and rejected children, but had acquired their habit because it "felt good" and gave them comfort. He emphasized the fact, however, that such oral habits have profound effects on the moulding of the face, e.g. thumb-sucking becomes detrimental if continued past the age of four.

The afternoon session was presented by Dr. Cohen in the form of a table clinic on "Operative Procedures for the Primary Dentition", and was concerned mostly with the subject of pulpotomies. Dr. Cohen employs calcium hydroxide in water or methyl cellulose over the vital pulp stumps following pulpotomy. This placed against vital tissue causes the odontoblasts to lay down a calcific barrier or dentine bridge under

which repair takes place resulting in vital pulps in the root canals. Dr. Cohen believes that this takes place due to the powerful alkaline shock these vital tissues receive, the calcium hydroxide having a pH of 12. One of the main criteria for a successful pulpotomy is that the pulp must bleed freely, since no repair can take place in a necrotic pulp. Hemorrhage is controlled by cotton pledgets with hydrogen peroxide. Dr. Cohen closed his interesting clinic with remarks on restorations for broken teeth in children.

—C.G.B.

"Throw out the old concept of focal infection and pay more attention to the facts" was the advice given by Dr. Douglas G. Cameron of the Department of Medicine, The Montreal General Hospital to the members of the **Montreal Endodontia Society** at the February meeting of the Society held in the Dental Faculty of McGill University.

Speaking on the subject of Focal Infection from an Endodontic Viewpoint, Dr. Cameron stressed that it is important that we begin to distinguish facts from fancy. As an example of this he discussed the once popular Rosenows theory in that specific bacteria produced specific (secondary) infections; this we now realize to be false for the experiment applied only to the use of streptococci. He also reviewed the history which saw its peak in the '20's of indiscriminately removing teeth, tonsils, gall bladders, etc., to cure any and all bodily ailments. Rheumatoid arthritis, for example, as we realize today is a complicated and little understood condition.

To consider the problem at hand, we must first ask ourselves (1) Do local infections occur in and about the teeth? and (2) Do these infections create trouble elsewhere? The answer to the first question is obviously "yes," and the areas involved fall into three areas—Periapical, Pulpal and Periodontal.

In considering the question of Periapical Infection, one investigator demonstrated that 61% of apical infections produced Strep. Viridans and in 28%, pure cultures were obtained. Staph. Aureus were found in 32% and in pure culture in 15%. Although it is known that S. Viridans produces sub-acute bacterial endocarditis, it is not often realized that Staph. Aureus infections are more troublesome to deal with medically. The same and other researchers feel that the x-ray is no proof of the presence of infection. One important thing should be remembered, Dr. Cameron stressed, and that is that the presence of bacteria means ONLY that bacteria are present—not necessarily infection.

With regard to periodontal infection, the speaker noted that bacteria from this source are continually in intimate contact with the lungs, gastro-intestinal tract and the circulation; these are all proven facts.

Pulpal infection, however, seems to be of little concern to our problem for there is no overwhelming evidence that infection of the vital pulp is of importance—until periapical infection occurs.

Realizing that Periapical and Periodontal Infection are present, then it is time to consider the second question of what effect these may have on conditions elsewhere in the body: To date there is very little specific data available, but there is, however, clinical evidence. The effects of infection are fourfold: (1) Bacteraemia—this occurs frequently from oral infections, but in the majority of cases is but of a transient nature. (2) Septicemia—the cause of severe illness with possibly death. (3) Pyemia—localized abscess clumps; and (4) Toxemia—An example of this is Diphtheria which is a localized infection; the toxins, however, are carried elsewhere and create serious trouble. Little is known of this subject, but it is a possibility that here lies our main problem.

With regard to the body defences against infection, Dr. Cameron discussed the role of immunity and how this immunity under particular circumstances can create hypersensitivity. He also discussed the collagen diseases which can be relieved by ACTH or Cortizone.

In conclusion, the speaker suggested that although it is difficult to make an exact diagnosis, nevertheless endodontists should attack infection vigorously observing the principles of good surgery and dentistry.

—R.F.H.

Newfoundland

The annual meeting of the **Newfoundland Dental Association** was held at Grand Falls recently.

Dr. F. A. Janes, president of the association, was in the chair, and he reported an active year with 14 meetings. Dr. E. P. Kavanagh, Registrar, stated that 10 new dentists registered in Newfoundland during the past year.

The association unanimously endorsed the resolution passed by the C.D.A. that the fluoridation of communal water supplies be recommended to the public.

Dr. W. S. Goodwin, who has practised in Newfoundland for 54 years, was made a life member of the Society.

Officers elected for the coming year were:

President, Dr. R. W. Ball; 1st Vice-President, Dr. J. M. Darcey; 2nd Vice-President, Dr. T. E. Harris; Secretary-Treasurer, Dr. D. Peters. Dr. Jones was appointed as delegate to the C.D.A.

The dental service for Newfoundland school children is steadily expanding. The St. John's Clinic has been reopened and Argentia will be having the services of a new clinic in the near future.

These dental services, and the one started at Clarenville in the fall of 1953, are made possible by health grants from the Federal Government and are administered by the local Health authorities.

Children in St. Barbe district have been receiving treatment from a travelling Dental Clinic for the past three years. This service is financed by funds contributed by the junior Red Cross members in Newfoundland, Ontario, and British Columbia, and is available to all school children in the district.

British Columbia

The Fraser Valley Dental Society held a Local Talent Program in Chilliwack on February 11th. To Dr. E. E. Kelln must go the credit for the organization of the meeting. The clinicians and subjects follow:

1. Dr. J. N. Penzer, Langley Prairie, "Gold Foil".
2. Dr. J. C. Rife, Cloverdale, "Paedodontia".
3. Dr. W. S. Trafton, Chilliwack, "Gingivectomy and Nitrous Oxide Administration".
4. Dr. W. G. Newby, Chilliwack, "Intra-Osseous Implant".

The clinics were followed by dinner at the Royal Hotel when there was a short business meeting and a discussion of the afternoon clinics.

In February the Upper Island Dental Society met at Nanaimo in the Central Preventive Clinic to witness a demonstration on "Pulpotomy of a Deciduous Tooth" presented by Dr. Max Nacht of Vancouver with a five-year old boy as the patient. Various problems associated with this type of dental service were later reviewed at an illustrated lecture in the Malaspina Hotel.

Dr. G. F. Gerneroy of Courtenay is President, and Dr. K. W. Bell of Campbell River is Secretary of the Society for the present year.

The March meeting of the Vancouver and District Dental Society consisted of a well-

attended afternoon session when Dr. William H. Gyllenberg of Longview, Washington presented a clinic on "Gold Inlays and their Cementation". In the evening, after dinner at the Hotel Vancouver, the official visit of the President and Secretary of the Canadian Dental Association was featured.

Dr. A. J. Coughlan, president of the Canadian Dental Association, who was introduced by Dr. Harold Cline, said he saw more snow in Vancouver than he had ever seen in his life. (He was taken up Seymour Mountain, one of our several ski-resorts within a half-hour's drive from the hub of the city.) In his address Dr. Coughlan asked that our representative on the Board of Governors stimulate interest in our national organization. "We need an informed membership," he said, and referring to public relations: "Make friends with your government representatives. It always helps when we have to deal with them."

Dr. Don W. Gullett, Secretary of the Canadian Dental Association, among many interesting and inspiring things, spoke of "indirect activities" which initiated the incorporation of a Canadian Dental Corps and of Health Insurance.

"Any sound projecture we can present will receive consideration on the highest level, if we deal properly with the individuals concerned."

"Long-term projects are the most important. Very often difficult beginnings have brought results, as for example the establishment of the Dental Headquarters in Toronto."

"The Canadian Dental Association is the only organization of its kind which has 100% membership."

"The Journal of the Canadian Dental Association, completely controlled by the C.D.A., is one of the solid foundation stones of the organization."

The city of Port Moody (near Vancouver) was the first municipal council in B.C. to approve of fluoridation in principle. Port Moody uses water supplied by the Greater Vancouver Water Board. The council is hopeful that the entire water supply will be fluoridated. Nevertheless, in the event that this is not accomplished, they are investigating the possibility of installing equipment to add fluoride to the water as it enters their own municipality.

—D.H.M.

The Ontario Dental Association 87th Annual Meeting

May 16—19, 1954 — Royal York Hotel, Toronto

CONVENTION HIGHLIGHTS

Sunday

- 9.00 p.m. — Musicales — Mary Syme, Pianist
Andree Theriault, Soprano
The Songmen, under Dr. Ouchterlony

Monday

- 8.00 a.m. — Dental Public Health Breakfast—
Speaker—Dr. D. V. Currey—St. Catharines
9.00 a.m. — Daily—Scientific Motion Picture Program
12.15 p.m. — Luncheon—Speaker: Mr. John G. Diefenbaker, Ottawa
2.00 p.m. — Annual Meeting—The Ontario Dental Association
3.00 p.m. — Panel—"Nutrition and Dental Health"
Dr. C. H. M. Williams, Moderator,
Dr. E. N. McHenry
Dr. A. L. Chute
Dr. J. Kreutzer
Dr. G. K. Clarke
6.30 p.m. — Class and Fraternity Reunions.

Tuesday

- 9.30 a.m. — Group Clinic Program
12.15 p.m. — Dental Public Health Luncheon
Speaker—Dr. Carl L. Sebelius, Nashville, Tenn.
2.00 p.m. — Essayists—Dr. Harry M. Seldin, New York
Dr. Ralph H. Boos, Minneapolis
7.00 p.m. — Convention Dinner Dance and Floor Show

Wednesday

- 9.30 a.m. — Group Clinic Program
2.30 p.m. — Table Clinic Program (14 clinics presented by out-of-Toronto dentists).

Ontario

At the annual meeting of the **Renfrew County Dental Society**, Dr. E. Murphy of Cobden was elected President, and Dr. D. V. Baits of Pembroke was elected Secretary-Treasurer.

At this meeting it was moved by Dr. D. L. McKerracher of Arnprior that the Renfrew Society approve in principle the fluoridation of communal water supplies. This motion was seconded by Dr. R. S. McMiller, of Barry's Bay, and was carried unanimously.

The second stated meeting of the **Academy of Dentistry**, Toronto, was held in Osler Hall on Thursday, February 11. This meeting was well attended and the speaker of the evening made that attendance very worthwhile. Dr. Wallace Graham took as his subject "The present status of infection in the rheumatic diseases", this subject proving of great interest to the members of the dental profession.

Dr. Elmer Henderson, the Academy President, presided at the meeting, and Dr.

Graham was extended a suitable vote of appreciation by the President-Elect, Dr. W. James Smith.

Mrs. J. H. Moyle, wife of **Dr. James Harvey Moyle**, passed away December 10, 1953, in her 48th year. Mrs. Moyle, a native of Paris, was a member of First Baptist Church, various Brantford organizations, a nurse, a graduate of Western General Hospital. Besides her husband she leaves two daughters, Mary Elizabeth and Catherine Anne at home.

On April 1st, 1954, **Frank Compton**, B.D.S., L.D.S. (London) D.D.S., D.D.P.H. (Toronto), assumed the office of **Director, Division of Dental Health, Department of Health, Toronto**, succeeding Dr. E. A. Grant, who retired from the position last fall.

Dr. Compton received his early education in London, England. He is the son of a physician and although born on the continent in 1925, lived in London from an early age.

He received his advanced education at the University of London. From 1943 to 1947, he attended King's College and the Royal Dental Hospital of the London School of Dental Surgery. He won many prizes and scholarships during this period and graduated in 1947 with the degree of B.D.S. (London). He was successful in obtaining his Licentiate of Dental Surgery from the Royal College of Surgeons.

Upon arrival in Canada, Dr. Compton accepted an internship for one year at the Royal Victoria Hospital, Montreal. He applied for admission to the Faculty of Dentistry, University of Toronto, and was accepted in 1948. He received the D.D.S. degree from this University in 1949.

Dr. Compton joined the staff of the Dental Health Division of the Department of Health in Ottawa in 1949. Upon retirement of the director he took over as acting-director until 1952, when he obtained leave of absence and entered the course leading to a Diploma in Dental Public Health at the School of Hygiene and Faculty of Dentistry, University of Toronto.

His academic attainments in this course showed a very scholarly record and he obtained the Diploma in Dental Public Health in 1953.

His administrative ability and his enthusiasm for better public health programs and services, along with a pleasing personality in meeting his fellow confreres, augurs well for a successful career as Director of the Division of Health in Toronto.

—G.T.M.

New Brunswick

At a recent meeting of the **Saint John Dental Association**, Dr. James McLean, professor of dentistry at Dalhousie University, was the guest speaker. Introduced by Dr. Hugh F. Bonnell, President of the New Brunswick Dental Society, Dr. McLean addressed the large gathering on the subject of gold inlays. He also stressed the need of a greater number of personnel in the New Brunswick dental profession.

Nova Scotia

The Halifax County Dental Society met on January 21st, with the President, Dr. Ken Kerr, Bedford, in the chair. Following the dinner the meeting was addressed by Dr. John Merrett, Halifax, who gave a very interesting talk on his recent visit to a number of Dental Schools under the auspices of the Kellogg Foundation.

On February 18th Dr. J. D. MacLean of the Faculty of Dentistry, Dalhousie University, addressed the Society on 'An Appraisal of Present Dental Personnel situated in the Atlantic Provinces'. This informative talk was very much enjoyed by the members. Dr. MacLean also spoke recently on the same subject before the dentists of St. John, New Brunswick.

—H.M.E.

Correspondence

To the Editor,
Journal of the Canadian Dental Association.
Sir,

Although, naturally, I hesitate to encroach on your valuable space, nevertheless, it would, I feel, be ungracious of me to remain silent.

Particularly, I desire to thank Professor J. H. Johnson for his all-too-generous appreciation, in your January issue, of my humble efforts in the vast field of historical dental research: and you, Sir, for publishing it.

I am still further indebted to Professor Johnson for his kind and understanding reference to the offer of the Honorary Degree of LL.D. by the Senate of the University of Toronto. In this connection, I am indeed most grateful not only to him, but also to Dean R. G. Ellis and the Members of the Faculty of Dentistry for their altruism

and generosity in recommending me for this high honour. Health alone prevented me from travelling the necessary 7,000 miles; my physician confirmed this in a certificate to the President.

Had circumstances proved favourable, it would have been sheer delight for me to have re-visited my *Alma-Mater*, consolidated old friendships, and made new ones. I must, therefore, be content to re-affirm Professor Johnson's remark that it will always be a great pleasure for my wife and me to welcome Canadians here, when I shall be delighted to show them my collections of early dental books, advertisements, instruments, etc.

Cordially yours,

J. Menzies Campbell,
D.D.S., L.D.S., F.I.C.D., F.R.S.E.

70, Great George Street,
Glasgow, W. 2.
(Telephone, Glasgow Western 0011).

General News

The membership in the **American Dental Association** soared to a new all-time high of 80,127 at the end of 1953. Included in the total were 67,269 active members and 3,092 life members, both new records. The new total is nearly 2500 higher than the previous record of 77,722 set in 1952. Because of these gains the number of members of the Association's House of Delegates has been increased to 403, the highest in A.D.A. history.

European Coordination Centre for Fluorine Research in Dental Caries Prophylaxis

was constituted in Constance, Germany. Its chief aim is to unite the workers actively engaged in the fields of fluorine research and dental prophylaxis.

Only scientists doing clinical or experimental research in these special fields will be accepted as active members and they must be willing to share the results of their efforts and collaborate without distinction of nationality.

The first general meeting of the newly constituted organization will be held in Salzburg, Austria, in 1954.

Fluoridation of public water supplies was in operation in a total of 864 communities in the United States as at the end of 1953. Included in this programme were an estimated 15,830,500 persons.

DR. MENDEL NEVIN FELLOWSHIP IN DENTAL ANAESTHESIOLOGY

Through the generosity of the Novococ Chemical Manufacturing Company and the co-operation of the University of Toronto Associates in New York, the Faculty of Dentistry, University of Toronto, is offering a Fellowship in Dental Anaesthesiology. The Fellowship, tenable at the University of Pittsburgh, is of two years' duration for the study of both local and general anaesthesia leading to a Master of Science degree.

If the applicant chosen is single, the value of the Fellowship will be \$1,500.00 per year plus tuition, but if the successful applicant is married, the Fellowship will be augmented to \$3,000.00 plus tuition by THE UNIVERSITY OF TORONTO ASSOCIATES in New York.

The successful candidate will receive free room, board and laundry on the basis customarily extended to hospital interns and must undertake to return to Toronto to practise and disseminate his knowledge of dental anaesthesiology.

Address all applications or requests for information to the Dean, Faculty of Dentistry, 230 College Street, Toronto, Ontario.

In Memoriam

Henry Winters—Dr. Henry Winters of Ottawa died on February 27, at the age of 87.

Born on Allumette Island, Dr. Winters received his early education at Pembroke. In 1900 he graduated from the Royal College of Dental Surgeons Ontario, and he then practised in Pembroke until 1908 when he moved to Ottawa where he practised until retiring in 1946.

He was a lifelong member of St. James United Church, and latterly an honorary elder.

Dr. Winters is survived by his widow, Amy Matilda; one son, Dr. Henry Theodore Winters of Ottawa, and two daughters, Mrs. Vernon Knowles of Ottawa, and Mrs. W. S. White of Montreal.

William Joseph Gunn—Dr. William Joseph Gunn, of Lancaster, Ontario, passed

away on February 18, 1954. He was 80 years of age.

Dr. Gunn was born in Lancaster, and received his early education at Williams-town High School. In 1900 he graduated from the Royal College of Dental Surgeons Ontario, then practised in Cornwall for two years, and thereafter in Lancaster until his retirement in 1950. In that year he was made an Honorary Member of the Royal College of Dental Surgeons.

Dr. Gunn was a Past Master of Masonic Lodge No. 207, G.R.C., and an ex-reeve of Lancaster, where he was Chairman of the Board of Health for 10 years.

A member of Knox United Church, he was Secretary of the Managing Board for 25 years, an Elder of the Church, and for many years Secretary, and later Superintendent, of the Sunday School.

Dr. Gunn is survived by his widow, the former Daisy Macdonald.

Frederick Nichol Badgley—Word recently reached us that Dr. Frederick Nichol Badgley died in June, 1953, at the age of 75.

Dr. Badgley was born in Belleville, Ontario, and received his early education at Albert College. In 1903 he graduated from the Royal College of Dental Surgeons, and then he practised in Toronto for fifty years.

Dr. Badgley was an Honorary Member of the Royal College of Dental Surgeons.

He was a member of St. Paul's Avenue Road United Church and belonged also to the Madawaska Club—Royal Canadian Institute.

Surviving are his wife, Margaret; two daughters, Mrs. D. A. Gunn and Mrs. D. E. McCutcheon, and one son, Donald R. Badgley, R.O.

Edgar Henry Robinson—Dr. Edgar Henry Robinson died at his home in Toronto on February 12, 1954. He was 80 years of age.

Dr. Robinson graduated from the Royal College of Dental Surgeons in 1909, and practised in Toronto.

He is survived by a cousin, Hubert Avery of Brockville.

F. C. Moore—Dr. F. C. Moore, pioneer dentist of Balcarres, Saskatchewan, died on December 20, 1953, at his home in California.

Dr. Moore left Balcarres several years ago due to illness.

He is survived by his wife; a daughter, Mrs. Fred Schallar, in California; a son, Clifford, in Alberta; a brother, and three sisters.

Wallace Lyle MacLaren—Dr. Wallace Lyle MacLaren of Toronto passed away on February 15. He was 54 years of age.

Dr. MacLaren was born in Belleville, and graduated from the Royal College of Dental Surgeons in 1923. He practised in New Toronto until 1930, when he moved to Kapuskasing where he was company dentist for Spruce Falls Power & Paper Company. Since 1943 he practised in Leaside.

During the First World War, Dr. MacLaren served overseas with the Cobourg Heavy Battery.

He was a member of St. John's Anglican Church, York Mills, and belonged also to the Leaside Lions Club and the Three Point Club.

Surviving Dr. MacLaren are his wife, the former Marjorie Morton; two daughters, Barbara and Judith; and one son, John.

John Roy Hay—Dr. J. R. Hay died suddenly in Vancouver, B.C., on February 24, at the age of 51.

He was born in Nelson and lived there and at Trail until 1921 when he left to attend the North Pacific Dental College in Portland, Oregon. After graduation, Dr. Hay came to Vancouver and opened an office in the Birks Building, where he practised for 25 years until his death.

He was a keen sportsman and his interest in mining and cattle ranching made him a well-known figure in the Fraser Valley and the Cariboo.

Dr. Hay leaves his wife, Ann, his parents and one sister.

John Donald Cameron—Dr. John Donald Cameron, of Renfrew, Ontario, died at his home on January 27. He was 83.

Born in Douglas, Dr. Cameron received his primary education there, before moving with his family to Renfrew, where he attended collegiate. He graduated from the Royal College of Dental Surgeons, and in 1895 returned to Renfrew where he practised until his retirement in 1948.

J. W. Dufour—Dr. J. W. Dufour died at Quebec City on January 31, 1954, at the age of 62.

He is survived by his wife, the former Bérandère Montreuil, and three sons, Marcel, Claude, and Dr. Jacques Dufour, dentist.

Conrad Brossard—Dr. Conrad Brossard of Rosemount, Quebec, died on February 13, at the age of 47.

He received his early education at Ste. Therese, and graduated from the University of Montreal.

Dr. Brossard is survived by two sisters and three brothers.

Albert Colborne DeMille—Dr. Albert Colborne DeMille died in Toronto on February 20, after a brief illness. He was 76 years of age.

Born in Northport, Dr. DeMille received his education at Picton High School, and in 1904 he graduated from the Royal College of Dental Surgeons. He practised in Picton and Milton until retiring in 1946.

Dr. DeMille was a member of the Masonic Order and Rameses Shrine.

He was predeceased by his wife, Delena E. Westman, and is survived by one brother, Dr. C. Carlyle DeMille, of Los Angeles.

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

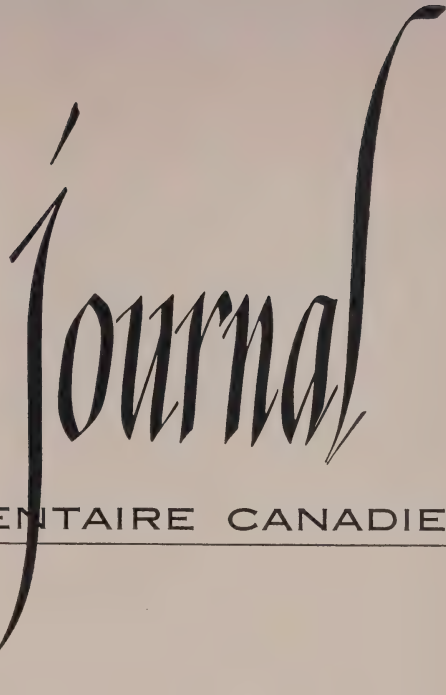
1954	St. Andrews By The Sea, N.B.	September 5th - 8th
1955	Toronto, Ontario	May 15th - 18th
1956	Banff, Alberta	June 3rd - 6th

Future Events

Date	Function	Location	Officer	Address
May 14-15-16	American Academy of Dental Medicine Annual Meeting	Philadelphia Pa.	Dr. William Greenhut	124 East 84th St., New York 28, N.Y.
May 15	Meeting Canadian Society Dent. for Children	Toronto	Dr. D. L. Rife	3014 Bathurst St., Toronto.
May 16-19	Convention—Ontario Dental Association	Toronto	Miss D. Jutton	234 St. George St., Toronto.
May 17	4T3 Class Reunion	Toronto	Dr. E. B. Hooks	788 Eglinton Ave. E., Toronto.
May 17	4T7 Class Reunion	Toronto	Dr. J. B. Hinch	2072A Danforth Ave., Toronto
May 17	1T4 Class Reunion	Toronto	Dr. E. H. Campbell	171 Yonge St., Toronto.
June 1-5	Pacific Coast Dent. Conference	Banff	Dr. H. Baden-Powell	308 Greyhound Bldg., Calgary, Alta.
June 8-14	Federation Dentaire Internationale	Scheveningen, Netherlands		
June 20-24	Berkshire Conference. Period. & Oral Pathology	Falmouth, Mass.	Dr. Irving Glickman	Tufts College Dental School, Boston, Mass.
July 6-9	American Dental Soc. of Europe	Paris, France	Mr. J. P. Maloney	110 Harley St., London W.1, England.
Sept. 5-8	Canadian Dental Assoc. & New Brunswick Dental Soc. Convention	St. Andrews By The Sea	Dr. S. K. Whetmore	147 Germain St. St. John, N.B.
Sept. 18	Convention of Northern Ontario Dent. Association	North Bay	Dr. W. L. Boland	355 Ferguson St., North Bay, Ont.
Oct. 25	Dental Alumni Annual Meeting	Toronto	Dr. Ben Gross	816 Bathurst St., Toronto.

Short Graduate Courses

Date	Course	Location	Address
May 3-7	Dental Oral Surgery	Univ. of Toronto	The Dean, Faculty of Dentistry, 230 College St., Toronto.
July 12-16	Oral Pediatrics	Tufts College	Dr. Irving Glickman, Tufts College Dental School, Div. of Graduate & Postgraduate Studies, 136 Harrison Ave., Boston 11, Mass.



DE L'ASSOCIATION DENTAIRE CANADIENNE

Structure de la fibre de Tomes

par BERTRAND KEREBEL, Landernau, France

L'identification des fibres de Tomes a été compliquée à loisir par la confusion des termes; les uns désignent sous le nom de "fibres" ou "procès" odontoblastiques ce que les autres appellent "tubes creux" ou même "gainés de Newmann". Cette confusion ajoutée à une critique insuffisante des méthodes et des résultats histologiques a entraîné de multiples interprétations personnelles sans fondement.

Débarrassées de l'abondante littérature, les connaissances relatives à la structure de la fibre de Tomes sont minces. Outre la critique des méthodes, une étude histologique valable de la fibre doit comporter la confrontation des résultats obtenus par l'examen des coupes par usure au microscope optique, en lumière traversante normale et polarisée; l'étude des coupes décalcifiées; les résultats de l'histochemie et enfin les observations faites au microscope électronique. Nous avons eu recours à l'étude des coupes décalcifiées après imprégnation en masse par le nitrate d'argent. Les coupes ont été examinées sans coloration ultérieure ou après coloration par l'hématoxyline éosine, Van Gieson, Mallory, Masson, chlorure d'or, . . .

1) L'étude histologique en lumière traversante normale des coupes obtenues par usure nous révèle des structures pour lesquelles nous avons pratiquement adopté la terminologie de BRADFORD^(1,2) parce qu'elle est, jusqu'à plus ample informé, la plus précise.

Une coupe préparée par usure, colorée au vert Masson, montre dans une région perpendiculaire à la direction des tubuli, les 4 structures suivantes:

- l'emplacement de la fibre;
- la zone circulaire translucide;
- la substance fondamentale inter canaliculaire (prenant le vert MASSON);
- la ligne de jonction entre la substance fondamentale et la zone translucide.

BRADFORD, dont la discussion des résultats est par ailleurs assez complète, désigne par "fibre de Tomes" sur ces coupes, ce qu'il nous paraît plus prudent de désigner par "emplacement de la fibre de Tomes". En effet, il faut rappeler qu'il est impossible de distinguer nettement une fibre de Tomes, sur la meilleure coupe obtenue par usure; la mise au point sur une telle coupe est assez variable pour que l'on puisse aussi bien interpréter l'image comme un "tube creux" qu'un fila-

ment; de plus, aux forts grossissements, un tubuli vide se présente sous des aspects très différents selon le mode de préparation de la coupe et le milieu de montage.

Les coupes par usure, imprégnées à l'argent, montrent encore dans une région perpendiculaire à la direction des canalicules les 4 structures précédentes. Toutefois, les variations d'imprégnation de ces structures sont telles qu'elles semblent avant tout dépendre de la méthode utilisée et du temps d'imprégnation. On ne peut tenir compte que des régions de la coupe dont la substance fondamentale intertubulaire est indemne de précipité d'argent. D'autre part, si l'emplacement occupé par la fibre est fortement imprégné, ce n'est pas seulement à une affinité spécifique qu'il le doit; se surajoute à ce phénomène, une réaction de diffusion de l'imprégnation combinée à une projection des différents plans de l'épaisseur de la coupe obtenue par usure.

Dans le cas de la coloration par le vert MASSON, comme dans l'imprégnation argentique, les 4 structures observées sont superposables; elles ne paraissent pas tenir à des artefacts. Par contre, ces coupes ne permettent pas de parler de coloration du "corps" de la fibre ou de son "pourtour" comme le fait BRADFORD,—étant entendu qu'elles ne permettent pas d'étudier à elles seules la structure propre de la fibre mais seulement son emplacement.

Sur les coupes par usure, parallèles à la direction des canalicules, il est beaucoup plus difficile de distinguer nettement les 4 structures visibles dans les plans de section perpendiculaires. Nous n'avons pas retenu l'étude de ces coupes dont l'interprétation n'a aucun caractère objectif.

Sur les coupes décalcifiées, la zone translucide autour de la fibre n'existe pas; elle est remplacée par un espace vide. L'examen exclusif des coupes décalcifiées a fait croire à l'existence d'un "espace" périfibrillaire, sur le vivant. La confrontation des coupes décalcifiées et des coupes par usure fait concevoir de sérieux doutes à l'égard de ce soi-disant "espace" décrit

aujourd'hui encore par quelques auteurs. En confrontant ces observations avec celles qu'a faites BRADFORD sur des coupes sectionnées sans décalcification préalable après imprégnation argentique, on peut voir que l'espace périfibrillaire n'est qu'un artefact; par contre sur ces coupes, on retrouve les 4 structures observées sur les coupes par usure.

2) Les coupes décalcifiées des dents de vertébrés supérieurs permettent de distinguer dans la dentine, les prolongements protoplasmiques décrits par Tomes en 1852.

On les colore à l'hématoxyline; par la méthode de MASSON; de MALLORY; par le bleu de TOLUIDINE; par le chlorure d'or. Elles prennent le noir Soudan B, particularité que l'on attribue à la présence de phospholipides⁽³⁾.

On les distingue bien à leur entrée dans la pré dentine quand elles sont arrachées, lors de la section, avec quelques odontoblastes ou bien isolées sur des coupes fines; elles ont, sur les coupes décalcifiées examinées au microscope optique, l'aspect de filaments.

Elles s'étendent sur une distance de 2 mm. environ à travers l'épaisseur de la dentine. Elles ont leur diamètre maximum au niveau de la zone dentino-pulpaire; toutefois ce diamètre est difficile à mesurer puisqu'on ne peut éviter la rétraction de la fibre; on se borne à mesurer le diamètre du tubuli dentinaire qui est à ce niveau de l'ordre de 4 microns.

A la jonction émail-dentine leur faible diamètre ne permet plus de les repérer; on peut seulement suivre les tubuli et les voir pénétrer dans l'émail. Du fait que la fibre de Tomes préexiste au tubuli qui l'entoure, en suivant ce tubuli on peut uniquement soupçonner l'existence de la fibre; on peut en suivre le *trajet* grâce à l'épaisseur de la coupe qui, elle-même, empêche d'en étudier la *structure*, qui, à ce niveau, est au delà du pouvoir de résolution du microscope. Aussi les diverses descriptions de la "structure" des fibres de Tomes au voisinage de leur terminaison sont-elles purement imaginaires; il en est

ainsi de leur "structure granuleuse" décrite par RETTERER ⁽⁴⁾ et reprise à son compte par DUBOIS-PREVOST ⁽⁵⁾.

Il a été longtemps admis comme un dogme que la fibre de Tomes était une structure très fragile. Après décalcification brutale (procédé simultané de décalcification-coloration), après action des alcalis, des ferments, il subsiste dans la dentine des structures filamenteuses que le dogme de la fragilité des fibres de Tomes obligeait à interpréter comme des "gainnes de Neumann"; cette opinion a été colportée par KOLLIKER, HOPEWEL-SMITH, CHOQUET, MUMMERY, etc.

Pour les mêmes raisons, c'étaient des "gainnes de Neumann" qu'avait cru découvrir HOPPE ⁽⁶⁾ dans les dents préhistoriques où selon MUMMERY ⁽⁷⁾, "il est tout à fait certain qu'aucune structure protoplasmique ne peut exister". En réalité, c'est sur un postulat plus fragile que les fibres de Tomes que reposent un certain nombre d'observations décisives de l'existence des "gainnes de Neumann". Les fibres de Tomes sont en effet remarquablement résistantes;

1° Histologiquement, les restes filamenteux de la dentine qui résistent aux attaques des acides forts, des alcalis et des ferments sont identifiables aux fibres de Tomes.

Le système fibrillaire de Tomes est formé par des fibres à directions parallèles entre elles mais reliées par de *très nombreuses anastomoses*, qui en compliquent la structure; méconnues dans le passé, ces anastomoses avaient empêché qu'on les identifie après alcalis.

2° L'attaque par le pepsine ne les détruit pas.

3° L'étude systématique des coupes décalcifiées des dents humaines du Néolithique nous a permis d'observer des fibres de Tomes dont l'aspect est identique à celui des fibres sur les dents actuelles. Ce sont ces fibres que HOPPE avait prises pour des gainnes de Neumann, distinctes des fibres de Tomes.

4° Lors de la préparation des répliques



FIG. 1

*Emplacement des fibres de Tomes et leurs ramifications imprégnés à l'argent.
Pseudo-gainnes de Neumann.*

de collodion, SCOTT et WYCKOFF ⁽⁸⁾ détruisent la dent par les acides et les ferments; or, malgré cette attaque brutale, il subsiste des prolongements fibrillaires collés au collodion, identifiables au microscope électronique comme appartenant aux fibres de Tomes.

L'étude de la structure propre de la fibre de Tomes pose inévitablement le problème de l'existence de la gaine de Neumann.

Les coupes décalcifiées après imprégnation en masse par le nitrate d'argent montrent 2 types d'images:

La figure 1 montre la fibre fortement imprégnée, un espace artificiel entourant la fibre, et un cerne imprégné à l'argent. A certains endroits de la figure, semble se détacher la paroi d'une "gaine" imprégnée à l'argent et distincte de la fibre centrale. Ce genre d'image a été interprété comme une preuve de l'existence d'une gaine de Neumann. En réalité, cette prétendue

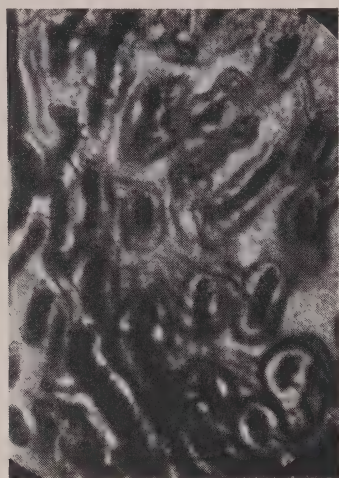


FIG. 2

Parois des tubuli dentinaires imprégnés à l'argent.

gaine est comparable à certaines anastomoses fibrillaires. Ces anastomoses sont nombreuses à tous les niveaux de la fibre et c'est seulement la coïncidence de sa position autour d'une fibre de Tomes qui crée la confusion avec une "gaine" de Neumann.

Un autre artefact des coupes décalcifiées est encore donné comme une preuve de l'existence de la gaine: l'affinité de la paroi tubulaire pour les sels d'argent (Fig. 2). Cette preuve peut relever un artefact si l'on considère l'image suivante (Fig. 3); la fibre de Tomes est entourée d'une auréole dessinée par l'imprégnation argentique. A un niveau de l'image on peut voir qu'une auréole semblable cerne 3 fibres de Tomes à la fois; il ne s'agit donc pas d'une gaine individuelle des fibres de Tomes, c'est une auréole banale et non une structure histologique déterminée.

La disposition artificielle des fibres (principales ou collatérales) après imprégnation argentique et action de la pyridine montre des torsions et des spirales qui peuvent simuler des "gainnes."

Admettre avec C. ROUILLER ⁽⁹⁾ l'existence d'une gaine de Neumann parce qu'en plus de l'affinité pour l'argent, la



FIG. 3

Pourtour des tubuli dentinaires imprégnés à l'argent—Auréole cernant 3 fibres de Tomes à la fois: pseudo—gaine de Neumann.

paroi dentinaire présente une affinité pour la thionine, c'est attribuer à cette réaction une certaine spécificité et oublier un simple phénomène physique que cet auteur mentionne ailleurs dans son travail; comme H. CHURCHILL ⁽¹⁰⁾ l'avait montré dans une membrane de celloïdine percée de trous, le colorant se dépose au bord des trous simulant une membrane. Les arguments histochimiques en faveur de l'existence possible des gaines de Neumann sont tout autres.

Quelle que soit la coloration utilisée, il arrive que se dessine autour de la fibre l'image d'une paroi, sur les coupes longitudinales. Ce genre d'image doit être interprété avec la plus grande réserve: elle peut être simplement fonction du mode d'éclairage, de son intensité et de la mise au point; elle peut provenir d'une rétraction de la fibre de Tomes qui se colle à la paroi ou se superpose à elle; enfin l'aspect d'une gaine peut être dû à la seule précipitation du colorant à la surface de la fibre.

3) *L'étude des coupes en lumière polarisée* ^(1,14) montre que les tubuli exercent une action sur l'orientation des

cristallites minéraux voisins; autour des tubuli, il y a une couche de cristallites orientés dans la direction des tubuli eux mêmes. Cette orientation, entraînant une modification structurale des parois dentinaires, pourrait être une explication de la "gaine de Neumann".

4) *L'histo chimie* montre une affinité différente de la fibre de Tomes et de la paroi tubulaire.

Diverses imprégnations argentiques marquent indifféremment et de façon variable les fibres de Tomes et les parois tubulaires. Par contre, les fibres de Tomes se colorent au noir Soudan B; elles ont une réaction positive avec l'acide périodique de SCHIFF et prennent les colorants acides. La paroi des tubuli dentinaires présente une forte métachromasie et une forte basophilie, propriété en faveur d'une structure définie des gaines qui seraient composées de mucopolysaccharide acide ^(3,12). Aucune de ces observations ne permet de résoudre un problème histologique qu'elles supposent, au contraire, préalablement résolu.

5) *Le microscope électronique* montre que la dentine renferme des tubuli avec une fibre centrale et une paroi fine à la périphérie ^(8,13). Après attaque, même légère à l'acide, cette paroi est parfois la seule structure visible ⁽⁴⁾, ce qui ne permet nullement de l'identifier à une gaine de Neumann étant donnée la résistance de la fibre de Tomes. Il faut aussi mentionner le fait qu'il n'a pas été possible d'isoler nettement une structure qui puisse être identifiée comme une gaine, tandis qu'un très grand nombre de fibres centrales sont facilement mises en évidence. Enfin ces prétendues enveloppes vues sur les répliques peuvent représenter des espaces dans lesquels a coulé le collodion; elles semblent être fonction de l'attaque ⁽⁵⁾.

Des fibrilles périodiques, circulaires et plus rarement obliques ont été observées au microscope électronique ⁽¹⁵⁾; elles tapissent les parois tubulaires; ce seraient les fibrilles de la gaine de Neumann. Il faut cependant remarquer que si le micro-

scope électronique ne se prive pas de montrer des fibres, il ne permet pas de décider s'il faut rattacher ces fibres au système fibrillaire de Tomes ou au système fibrillaire de la substance fondamentale. Le microscope électronique montre des fibres collagènes, un aspect tubulaire de la fibre de Tomes ⁽⁵¹⁾ qui pourrait être constitué par un faisceau de fibrilles ^(8,16) et enfin de fines fibrilles actuellement non identifiées ⁽⁸⁾. Elles sont distinctes des autres fibres, leur diamètre varie de 0,01 à 0,1. Elles cheminent seules, en faisceaux parallèles ou mêlées; elles sont indépendantes parfois, ou en rapport avec les fibres de Tomes. A l'heure actuelle, il n'est pas possible de savoir si elles se rattachent à la substance fondamentale ou au système de fibres de Tomes, constituant une gaine de Neumann ou la portion périphérique de la fibre.

Actuellement, seules des observations isolées et incomplètes peuvent donner l'illusion que nous connaissons la structure de la fibre de Tomes. La fibre, ses anastomoses à tous les niveaux, une zone translucide périfibrillaire et une séparation nette entre cette zone et la substance fondamentale semblent des structures variées. Plusieurs arguments rapportés d'après l'étude des coupes décalcifiées relèvent d'artefact. Le microscope polarisant montre une orientation particulière des cristallites le long de la paroi des canalicules. L'histo chimie révèle des propriétés différentes de la fibre et de la paroi canaliculaire. Au delà de ces résultats, c'est le domaine des hypothèses insuffisamment ou non vérifiées. Que la fibre soit constituée par un axe (prenant les colorants cytoplasmiques) et une portion périphérique (prenant les colorants nucléaires) est possible mais on ne sait pas si la portion périphérique appartient au système fibrillaire de Tomes, ou si elle fait partie de la paroi canaliculaire c'est-à-dire si elle est reliée à la trame fondamentale dentinaire constituant une "gaine de Neumann".

CONCLUSIONS

La structure intime de la fibre de Tomes

est mal connue. La fibre, ses ramifications à tous les niveaux, une zone translucide périfibrillaire et une séparation nette entre cette zone et la substance fondamentale, sont des structures vraies. Le microscope polarisant montre une orientation particulière des cristallites le long de la paroi des canalicules. L'histochemie révèle des propriétés différentes de la fibre et de la paroi canaliculaire. Cependant, la gaine de Neumann, telle qu'elle est décrite d'après les seuls arguments histologiques dus à l'étude des coupes décalcifiées au microscope optique, est un artefact. Que la fibre soit constituée par un axe (prenant les colorants cytoplasmiques) et une portion périphérique (prenant les colorants nucléaires) est possible, mais on ne sait pas si la portion périphérique appartient au système fibrillaire de Tomes ou si elle fait partie de la paroi canaliculaire, c'est-à-dire, si elle est reliée à la trame fondamentale dentinaire constituant une "gaine de Neumann".

BIBLIOGRAPHIE

- 1) E. BRADFORD. Brit. Dent. Jour. 1951, 12, 303.
- 2) E. BRADFORD. Brit. Dent. Jour. 1950, 9, 203.
- 3) G. WISLOCKI, M. SINGER et C. WALDO—Anat. Rec. 1948, 101, 487.
- 4) E. RETTERER et LELIEVRE.—Histologie dentaire (Baillière, Paris 1922).
- 5) R. DUBOIS — PREVOST — La dent (Le François, Paris 1949).
- 6) F. HOPPE—Virchow's Archiv. F. Pathol. Anat. 1862, 24, 13.
- 7) H. MUMMERY. The microscopic and anatomy of the teeth. (Oxford University Press 1924).
- 8) D. SCOTT et R. WYCKOFF. Jour. Dent. Res. 1950, 29, 556.
- 9) C. ROUILLER — La gaine de Neumann — Thèse (Genève 1951).
- 10) H. CHURCHILL—Jour. Dent. Res. 1934, 14, 243.
- 11) A. HEIL—Dentsch. Zahn. Mund. u. Kieferheilk. 1939, 6, 347.
- 12) G. WISLOCKI et R. SOGNAES—Amer. Jour. Anat. 1950, 87, 239.
- 13) A. SYRRIST et G. GUSTAVSON—Odont. Tidskrift. 1951, 59, 500.
- 14) D. SCOTT et R. WYCKOFF—Publ. Health Rep. 1947, 62, 1513.
- 15) C. ROUILLER, L. HUBER et E. RUTISHAUSER—Acta Anat. 1952, 16, 16.
- 16) G. HELWIG et E. MENKE—Naturwiss. 1949, 36, 281.

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Dr H. N. Beach.

A la première réunion de l'Association dentaire canadienne, tenue à Montréal en septembre 1902, on discuta de la possibilité d'établir un organisme national d'examen dentaire. Cinquante ans plus tard, en juin

1952, le gouvernement fédéral approuvait les statuts du Bureau national d'Examen dentaire du Canada.

Le recul des années ne nous permet pas encore de rendre justice à tous les individus qui ont consacré leur temps et leur énergie—et qui parfois ont dû sacrifier des idées qui leur étaient chères—pour réaliser un idéal favorable à la dentisterie canadienne. Tous avaient foi aux bienfaits d'un organisme du genre.

Les journaux du pays n'ont pas laissé passer cet événement. Dans des éditoriaux louangeurs, plusieurs journaux de notre pays en ont félicité la profession, en soulignant leur confiance que cette initiative servirait les meilleurs intérêts de la population dans l'avenir.

Les termes du mandat du Conseil d'enseignement dentaire de l'A.D.C. confiaient à celui-ci la tâche de préparer les voies du Bureau national.

Plusieurs années avant 1951, le Conseil

tenta d'élaborer les principes directeurs de cette organisation. A sa suggestion, le Bureau des Gouverneurs, à sa réunion de mai 1950, décidait de convoquer les différents collèges provinciaux du pays à une assemblée, pour jeter les bases de cet organisme.

Toutes les provinces répondirent favorablement et les représentants de tous les bureaux provinciaux de chirurgie dentaire du Canada se réunirent au Secrétariat de l'Association dentaire canadienne, le 9 février 1951, sous la présidence du docteur R. P. Lowerey, qui était alors président de l'A.D.C. Cette assemblée fit preuve de la plus entière collaboration et d'une élévation peu ordinaire d'idées pour doter la profession des standards les plus élevés possible.

On tint compte du travail considérable des prédécesseurs, en mentionnant plus particulièrement la personne de feu le Dr Ken Carver; du rendement précieux des enquêtes du Conseil d'Enseignement dentaire pour améliorer la valeur de l'enseignement dans les universités et pour fixer les exigences minima pour les études; et la conviction profonde que l'organisation d'un Bureau national d'Examen dentaire règlerait, sur une base nationale, les qualifications pour l'exercice de la dentisterie. Après les avoir étudiées et amendées, l'Assemblée approuva les recommandations proposées par le Conseil d'Enseignement dentaire au sujet de l'organisation d'un Bureau national d'Examen dentaire, en incorporant les trois principes généraux suivants:

1. Que les qualifications exigées pour l'admission aux examens soient les plus élevées au Canada;
2. Que les statuts et les règlements concernant les examens soient approuvés par les bureaux provinciaux concernés;
3. Que les examens soient menés en toute justice pour tous les intéressés.

L'assemblée approuva unanimement cette résolution: "Que le Comité exécutif de l'Association dentaire canadienne procède . . . à l'incorporation du Bureau national d'Examen." Les divers bureaux provinciaux nommèrent les membres du Bureau et aussi deux membres qui

seraient les représentants du Conseil d'Enseignement dentaire.

Le Bureau se réunit pour la première fois au secrétariat de l'A.D.C. à Toronto, les 29 et 30 juin 1953; à cette assemblée, on adopta les règlements, on élut des membres du Comité exécutif et on choisit un secrétaire qui agirait aussi comme registraire.

On ne peut relater les événements ci-dessus sans mentionner le Conseil dentaire du Canada qui fut mis sur pied à Montréal en 1902. Cet organisme a bien servi la population durant un demi-siècle. Durant cette période de temps, le Conseil a octroyé 1,930 certificats. Il a, de plus, aidé pécuniairement, d'une façon considérable, le Comité des Recherches de l'A.D.C. et l'organisation du Bureau national d'Examen dentaire. Par une coïncidence étrange, l'assemblée définitive de ce Bureau prit place à Montréal, durant le congrès annuel de l'Association dentaire canadienne, en octobre dernier, exactement cinquante et un ans après sa suggestion, à une réunion de l'Association dentaire canadienne, plusieurs années auparavant.

A cette occasion, le Conseil a remis au Bureau national d'Examen dentaire son solde considérable de fonds. Cette offrande fut acceptée par le docteur H. J. Merkeley, président du Bureau national d'Examen dentaire, qui fut, un certain temps, président du Conseil dentaire du Canada. Celui-ci exprima, en termes appropriés, ce qu'il appela "ce geste magnanime du bon-vouloir envers la profession dentaire tout entière". Tous les dentistes canadiens présents rendirent hommage aux membres du Conseil, les docteurs Winn, Brett, Freeland, Peters, Crosby et McIntyre.

Malgré ses efforts constants à se faire reconnaître par toutes les provinces, le Conseil dentaire du Canada n'a pu atteindre ce but et devenir un organisme vraiment national. Il n'avait, tout simplement, pas atteint une maturité suffisante. Cette unité s'est réalisée sous une nouvelle bannière. Ce Bureau national d'Examen dentaire octroie des certificats aux candi-

dats heureux, dont la compétence est déjà reconnue dans une ou dans toutes les provinces par le Bureau provincial; ces certificats permettent d'obtenir une licence pour exercer dans une province en particulier.

Le Bureau se doit de tracer la voie pour répondre aux besoins dentaires de la population. Les lois du pays confèrent à la profession dentaire le privilège de régler elle-même ses activités, dont le but est de veiller à la santé dentaire des habitants de ce pays. Si les dentistes faillissent à la tâche, l'Etat se chargera de leurs responsabilités et leur enlèvera leur liberté d'action.

L'an dernier, au 1er juin 1953, la population avait augmenté de 351,000 citoyens. Durant l'année se terminant en janvier 1953, le nombre des dentistes avait augmenté seulement de 351 praticiens, en tenant compte des décès et des retraites. Si le rythme de cet accroissement se continue jusqu'en 1961, avec le même taux d'immigration et d'augmentation naturelle, il faut s'attendre à une population de 17,500,000 habitants, ayant pour la desservir 5,530 dentistes.

Les inconvénients d'une telle situation n'ont pas à être énumérés aux lecteurs de ce journal. Nous risquons de perdre la partie parce que nous ne serons pas

suffisamment préparés à faire face à ce problème.

Il nous faut réfléchir, mobiliser les effectifs dont nous disposons et enrégimenter des auxiliaires pour prodiguer les meilleurs services sanitaires de dentisterie possible et pour doter notre population d'un état de santé insurpassable.

Un programme susceptible de satisfaire aux besoins présents peut servir de modèle pour les autres pays. Un Bureau national d'Examen dentaire trouve sa place dans un tel programme.

H. N. Beach, *secrétaire*.

Note: Les Collèges provinciaux peuvent tenir, à leur discrétion, des examens pratiques. Pour renseigner d'avantage les candidats, on tient à élaborer les sujets d'examens d'une façon plus détaillée. Ainsi:

la dentisterie opératoire comprend le diagnostic, la radiographie et la céramique;

la prothèse inclut les couronnes et ponts, la prothèse complète et partielle; la dentisterie préventive (comprenant tout ce qui a trait à la pédo-dontie) renferme l'orthodontie, la nutrition, les méthodes de contrôler la carie, l'hygiène buccale, la prophylaxie, l'application des principes de prévention en dentisterie.

Congrès de la Société Dentaire de Montréal

sous le patronage de l'Hon. Paul Martin
ministre de la Santé nationale et du Bien-Etre social
à Ste-Marguerite (Alpine Inn)

les 6, 7, 8, 9 juin 1954

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ÉDITORIAL

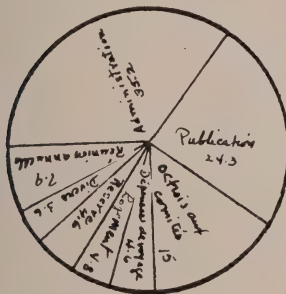
L'A.D.C. est prévoyante.

Etre dentiste ne veut pas dire qu'on est expert en matière d'argent! Loin de là! On prétend même que les professionnels, en général, sont de piètres financiers; ils ont même la réputation d'être de mauvais administrateurs.

Nonobstant ces défauts—qu'on pourrait sous certains angles qualifier de qualités—le dentiste canadien connaît assez la signification des bilans financiers pour apprécier l'efficacité de l'administration d'un organisme tel que l'Association dentaire canadienne.

Comment sont administrées les cotisations annuelles versées par ses membres à l'A.D.C.? Quels usages fait-elle des quinze dollars que chaque dentiste lui verse par le truchement de son association ou de son collège provincial? Car, celui qui paie a le privilège de connaître l'emploi qu'on fait de son versement, d'après le "slogan": "Pas d'impôt, sans droit de regard".

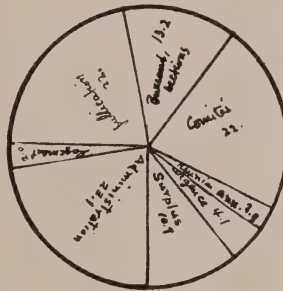
Les graphiques ci-contre, illustrent la proportion consacrée aux diverses catégories d'activités et ce pour trois associations dentaires qui se ressemblent par leur constitution et leurs buts: Association dentaire canadienne, Association dentaire américaine, Association dentaire britannique.



A.D.C.

A.D.C. Budget de 1953

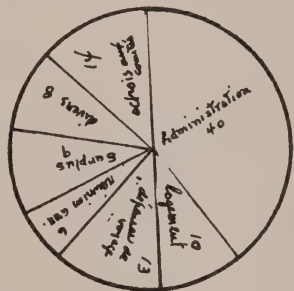
Logement
Administration
Publications
Octrois aux comités
Réunion annuelle
Dépenses de voyage
Divers
Fonds de réserve



A.D.A.

A.D.A.

Logement
Administration
Réunion annuelle
Bureaux, sections
Conseils
Comités
Publications
Fonds d'urgence
Surplus



A.D.B.

A.D.B.

Logement
Administration
Dépenses de voyage
Octrois aux comités
Réunion annuelle
Divers
Surplus

Ces graphiques montrent que la proportion allouée pour les diverses activités de ces associations est à peu près la même; les écarts s'expliquent par leur ancienneté et par diverses circonstances d'époque ou de lieu.

Un item qui frappe les yeux constitue le fonds de réserve de l'A.D.C., que ne possèdent pas les deux autres groupements. Ce fonds de réserve de notre Association qui n'existait pas en 1944, se chiffre, en 1953, à \$30,000. Chaque année, à même ses revenus, l'Association consacre un minimum de \$1,500 à son fonds de réserve et ce montant sert à acheter des obligations des gouvernements fédéral et provinciaux; ces obligations rapportent des intérêts qui grossissent les revenus de l'association, et lui permettent d'accentuer son travail. L'idée d'un fonds de réserve s'inspire de la saine économie qui doit présider à l'élaboration de tout budget. Un particulier qui veut parer aux hasards de l'avenir, tient à se constituer des réserves; de même, une association prévoyante doit mettre de côté une partie de ses revenus, sans nuire à ses activités normales, pour avoir en disponibilité des valeurs négociables en cas d'urgence.

On a vu de quelle utilité pouvait être un fonds de réserve, quand il s'est agit d'acheter la propriété qui abrite actuellement les quartiers-généraux de l'A.D.C., à Toronto. La situation était urgente: on avait trouvé un édifice convenable et il fallait bâcler rapidement et avec de l'argent comptant cette transaction. L'Exécutif emprunta du fonds de réserve le montant nécessaire et put acquérir cet immeuble qui fait aujourd'hui l'orgueil de la profession dentaire.

D'autres occasions peuvent surgir où il est utile de pouvoir compter sur ce fonds. Par exemple, un gouvernement déciderait-il de passer une loi concernant les choses dentaires préjudiciable aux intérêts du public et de la profession? L'Association devrait pouvoir disposer peut-être de sommes considérables pour alerter l'opinion publique, retenir les services d'experts en matière sociale et juridique, etc. En un mot, l'existence du fonds de réserve de l'A.D.C. est dictée par une sage administration.

Gérard de Montigny.

Nouvelles de l'Association

Enquête sur l'aspect économique de la profession dentaire

On s'apprête à commencer une enquête sur l'aspect économique de la profession dentaire pour classer certaines données précises de la dentisterie canadienne. Jusqu'à maintenant, on n'a pu avoir des données sûres sur le rendement pécuniaire de l'exercice dentaire au Canada. On a mis à la poste vers le 15 février un questionnaire à chacun des dentistes du pays. Les renseignements fournis par ces formules permettront à l'Association de tirer des conclusions qui influenceront ses activités dans l'avenir.

Politique au sujet de la fluoruration de l'eau des aqueducs

Depuis que l'A.D.C. a adopté la résolution approuvant la fluoruration de l'eau des aqueducs, à son assemblée annuelle, en octobre dernier, on s'est demandé en certains milieux quel rôle prétendait jouer l'Association dans ce mouvement. A une assemblée récente, le Comité des Recherches a décidé d'établir une politique à ce sujet, de

façon à éliminer toute confusion. Les représentants les plus intéressés à la question ont donc été convoqués. Sous la présidence du président élu, le Dr P. G. Anderson, se sont réunis les membres du Comité des Recherches, des Relations extérieures et d'Hygiène dentaire publique, le 23 décembre dernier. Après avoir étudié la question, ces représentants ont adopté les deux résolutions suivantes:

1) La fonction de l'Association dentaire canadienne, en regard de la fluoruration des eaux de consommation, est d'étudier tous les rapports scientifiques sur le sujet et de fournir les renseignements nécessaires. L'Association recommande la fluoruration de l'eau des aqueducs, mais elle ne peut entreprendre de convaincre les municipalités d'adopter cette mesure. En un mot, son rôle est purement consultatif.

2) Que le secrétaire soit chargé de répondre à toutes les demandes de renseignements, en respectant cette politique et en consultant le Comité à l'occasion.

Ces résolutions ont ensuite été soumises à l'Exécutif, qui les a approuvées unanime-

ment; elles représentent donc la politique de l'A.D.C. au sujet de la fluoruration des eaux publiques.

Réclame au sujet de médicaments dentaires

Ces derniers mois, des réclames d'envergure au sujet de médicaments dentaires ont soulevé des protestations nombreuses. Le secrétariat a reçu des suggestions pour contrecarrer l'effet de certaines prétentions de ces annonces. Depuis plusieurs années, le Comité des Recherches collabore dans ce sens avec la Division des Aliments et Drogues du Ministère de la Santé nationale et du Bien-Etre social. La déclaration suivante, émanant de la Division des Aliments et Drogues, explique la situation:

"Les annonces au sujet des dentifrices seraient plus répréhensives, si nous ne censurons pas ces annonces avant leur parution: cependant pour ce faire, les manufacturiers doivent collaborer avec nous en nous soumettant le texte de leurs réclames."

Le Comité des Recherches croit que les membres devraient continuer à lui faire leurs remarques au sujet de ces annonces et le Comité, à son tour, les soumettra à la Division des Aliments et Drogues.

Imprimés de l'A.D.C. offerts aux membres

Hygiène dentaire publique

Healthful Living—un pamphlet d'usage courant renfermant les réponses à des questions qui sont généralement posées au sujet des dents des enfants; écrit dans un langage clair pour les parents et les enfants. Prix: une copie: gratis; pour certaines quantités: .01, chacune.

Dental Health Guide for Teachers and Parents—pamphlet bien utile et rempli de renseignements données en langage simple sur les soins des dents.

Prix: une copie: gratis; pour certaines quantités: .01, chacune.

How to Brush your Teeth—brochure illustrée de photographies et de dessins, expliquant à l'aide d'un texte imagé, une méthode rationnelle de brosser les dents. Cette publication a été préparée avec grand soin pour éduquer les parents sur cette question. Prix: une copie: gratis; pour certaines quantités: .01, chacune.

Your Child and Mine—(40 pages)—un pamphlet de la grandeur d'une lettre renfermant des renseignements illustrés sur l'hygiène dentaire infantile. C'est une publication très bien faite qui devrait se trouver dans la salle d'attente de tous les dentistes et à la disposition de tout instituteur.

Prix: \$1.00, par copie.

Divers

La carrière de dentiste, au Canada—une

pellicule cinématographique et un manuel explicatif. On peut en emprunter une copie des secrétaires des Collèges provinciaux ou en écrivant au secrétariat de l'A.D.C. On peut en acheter des copies en s'adressant à l'Association Screen News, 108 Peter St., Toronto, Ont., à raison de \$2.50, par copie. Ce film et le manuel qui l'accompagne convient à illustrer une conférence d'orientation professionnelle à des étudiants de cours secondaire, mais peut aussi s'utiliser à d'autres fins.

La carrière de dentiste (32 pages)—pamphlet renfermant des renseignements sur la profession dentaire à l'intention des étudiants de cours secondaire.

Prix: une copie: gratis; pour certaines quantités: .08, chacune.

Données sur la fluoruration (48 pages)—une publication très bien soignée renfermant des statistiques scientifiques sur la fluoruration des eaux des aqueducs. Cette plaquette a été préparée pour fournir des renseignements au point sur cette question; on la tient à date à mesure que de nouvelles statistiques apparaissent dans les publications scientifiques.

Prix: une copie: gratis; prix à fixer pour certaines quantités.

Facts—un questionnaire sur la fluoruration, qui a été publié en février 1954.

**Hygiénistes dentaires, auxiliaires de la profession dentaire*—un pamphlet renfermant des données sur les hygiénistes dentaires.

Prix: gratis aux membres.

**Guide d'étiquette professionnelle* — un fascicule attrayant exposant les principes d'étiquette professionnelle pour guider l'exercice de la dentisterie.

Prix: une copie: gratis; prix à fixer pour certaines quantités.

**Manuel d'hygiène dentaire* — pamphlet exposant les projets de l'Association dentaire canadienne dans le domaine d'hygiène dentaire.

Prix: une copie: gratis; prix à fixer pour certaines quantités.

**Politique d'hygiène dentaire* — pamphlet exposant le programme de l'Association dentaire canadienne en hygiène dentaire.

Prix: gratis sur demande.

**Le rôle de la prévention dans un programme d'hygiène dentaire*—fascicule exposant l'aspect préventif d'un programme d'hygiène dentaire.

Prix: une copie: gratis; prix à fixer pour certaines quantités.

Services dentaires industriels (40 pages)—pamphlet faisant l'histoire de la dentisterie industrielle et exposant la politique de l'Association dentaire canadienne sur cette question; renfermant aussi des projets

et des recommandations pour de tels services.

Prix: une copie: gratis sur demande.

Enseignement préparatoire à la dentisterie (69 pages)—une compilation faite par feu le Dr Thomas Cowling, vice-doyen de la faculté dentaire de l'Université de Toronto, à la demande du Conseil d'Enseignement dentaire de l'A.D.C.

Prix: gratis sur demande.

Catalogue de la bibliothèque—Liste des volumes disponibles de la Bibliothèque de l'A.D.C., avec fiches des dernières acquisitions.

Prix: gratis sur demande.

*Publié en anglais et en français; les autres en langue anglaise seulement.

On peut obtenir ces publications—en s'adressant à l'Association dentaire canadienne, 234 rue St. Georges, Toronto, Ontario.

Nouvelles diverses

—Le docteur A. J. Coughlan président de l'A.D.C. a rendu visite aux sociétés dentaires de l'ouest du pays du 18 février au 12 mars; il s'est rendu aux endroits suivants: Fort William, Port Arthur, Saskatoon, Edmonton, Calgary, Lethbridge, Nelson, Victoria, Vancouver, Regina, Winnipeg.

—La prochaine réunion du Conseil d'Enseignement dentaire aura lieu les 14 et 15 juin 1954.

—La réunion annuelle de la Fédération dentaire internationale aura lieu à Schwingen, La Haye, Hollande, du 8 au 13 juin 1954.

—Le journal "Dental Items of Interest," qui a été publié par The Novocol Chemical Co., a suspendu sa publication en décembre 1952, après 75 ans d'existence.

Acquisitions récentes de la bibliothèque

BLACKBURN, R. H. A joint catalogue of the serials in the Libraries of the city of Toronto. 5th ed. 1953. 602p.

DUNNING, W.B., and DAVENPORT, S. E. A dictionary of dental science and art. 1936. 635p. illus.

GUEDDEL, A. E. Inhalation anesthesia. 2nd ed. 1952. 141p. illus.

HALS, EINAR. Fluorescence microscopy of developing and adult teeth, 1953. 154p. illus.

RUPPE, CH. Maladies de la pulpe et monarthrites alveolo-dentaires. 1948. 64p.

BARSKY, A. J. Principles and practice of plastic surgery. 1950. 499p. illus.

BAYER, L. M., and GREEN, E. Kitchen strategy. 1952. 112p. illus.

BYRD, O. E. Health instruction year book. 1952. 232p.

GROSSMAN, L. I. Transactions of the world conference on endodontics. 1953. 108p. illus.

HAUPL, K., GROSSMAN, W. J., and CLARKSON, P. Functional jaw orthopaedics. 1952. 408p. illus.

KELLS, C. E. Three-score years and nine. 1926. 563p. illus.

LANDA, J. S. The dynamics of psychosomatic dentistry. 1953. 435p.

McCARRISON, SIR R. Nutrition and health. Edited by H. M. Sinclair. 1953. 125p.

SIDDLE, G. H. The technique of stainless steel work in mechanical dentistry. 1945. 81p. illus.

TATTERSALL, W. R., and BARRY, H. D. The dentist's handbook on law and ethics. 1953. 328p. illus.

THATCHER, V. S. History of anesthesia. 1953. 289p. illus.

WALKER, B. S., BOYD, W. C., and ASIMOV, I. Biochemistry and metabolism. 1952. 812p. illus.

WHITEHOUSE, W. J., and PUTMAN, J. L. Radioactive isotopes; an introduction to their preparation, measurement and use. 1953. 424p. illus.

Chirurgie dentaire . . . en gros

Un dentiste berlinois vient d'avoir la plus grosse surprise de sa vie. On lui a demandé de plomber une dent . . . à l'éléphant *Shantis*, offert au Zoo de Berlin par le premier ministre de l'Inde, M.Nehru. Un gros client! Le praticien a dû composer un plombage de 100 grammes qui est un amalgame d'or et de bronze. *Shantis* qui souffrait depuis plusieurs nuits d'une rage à la défense droite, s'est prêté de bonne grâce à l'opération, ce qui lui a valu les compliments du dentiste. "*Shantis* a été plus courageux qu'une personne," a déclaré celui-ci. "Je voudrais n'avoir que des éléphants à soigner!"

L'Information dentaire, 15 janvier 1953.

Nécrologie

Le docteur Philippe Hamel

par PAUL-EMILE POITRAS, D.D.S., Montréal.



*Il faut en ce bas monde aimer beaucoup de choses
Pour savoir après tout ce qu'on aime le mieux.*

ALFRED DE MUSSET.

Le docteur Philippe Hamel, décédé le 22 janvier 1954, aima toute sa vie deux choses: la chirurgie dentaire et la politique.

Acharné au travail bien qu'il fût vaincu de son talent, il s'efforça, en tout temps et en tout lieu, d'atteindre un idéal

qui consistait à rendre la chirurgie dentaire la plus intéressante des professions quoiqu'elle fût regardée autrefois comme un parent pauvre de la médecine.

Chef des chirurgiens-dentistes de la région de Québec, il ne cessa jamais, avec plusieurs de ses confrères, de demander aux futurs adhérents de sa profession d'obtenir leur baccalauréat et de posséder une culture classique, qui les rendrait plus

aptes à suivre les cours et à devenir de meilleurs dentistes.

Qui sait? Voulait-il aussi se moquer de certains professeurs de nos collègues qui voyaient autrefois chez les étudiants en chirurgie dentaire des paresseux et des "minus habens"?

Il était un homme entier. Gouverneur depuis 1924, vice-président du Collège des Chirurgiens-Dentistes de la province de Québec, le 13 janvier 1934, il démissionna avec six des membres de ce bureau en protestation contre l'opposition des universités McGill et Montréal qui refusaient d'exiger le baccalauréat pour l'admission aux cours universitaires.

Homme d'action, la politique l'attira. Député à la Législature de Québec pour le comté de Québec-Centre, de 1935 à 1939, il refusa un portefeuille de ministre dans le premier cabinet Duplessis pour garder ses coudées franches.

Les années 1935 à 1950 furent les années les plus actives de sa carrière politique et professionnelle. Il y publia tous ses travaux dont voici un aperçu. En plus de ces discours à l'emporte-pièce, prononcés devant les députés, en 1935 et en 1939, il écrivit:—"Le trust de l'électricité, menace pour la sécurité sociale" (1937).—"La bourse et ses ruines" (1937).—"Notre société croule sous le poids de l'usure."—"La canalisation du Saint-Laurent" (1940).—"La marche vers le socialisme" (1942).—"Les abus du capitalisme."—"Les responsables de la deuxième guerre mondiale" (1948). Comme il est inutile d'alourdir mon sujet, j'en passe.

Le docteur Philippe Hamel est né à Québec, le 12 octobre 1884, fils du docteur en médecine, Charles-Auguste Hamel, et de Sophie Vallière, décédés.

Après ses études classiques au Petit Séminaire de Québec, il étudia deux ans à la faculté de Médecine Laval, à Québec, et deux ans à l'école dentaire Laval, à Montréal, où il obtint, en 1907, un parchemin de docteur en chirurgie dentaire; ensuite il s'en fut suivre un cours de per-

fectionnement à la faculté dentaire de l'université de Philadelphie, U.S.A.

De retour à Québec, il épousa mademoiselle Georgine Normandin, de Montréal, qui lui survit de même que six enfants, quatre garçons et deux filles: le docteur Jules, —Guy, —le révérend père Edouard, S. J., —le docteur Henri, —madame Paul Audet (Thérèse), —madame Jacques Larue (Yolande) et dix-neuf petits-enfants qui garderont son souvenir.

Le docteur Philippe Hamel, travailleur infatigable, était professeur agrégé à la faculté de médecine de l'Université Laval; chef du service de stomatologie à l'hôpital du Saint-Sacrement, à l'hôpital de l'Enfant-Jésus, à l'hôpital du Sacré Coeur et à l'Hôtel-Dieu de Québec; membre de la Société de Stomatologie de Québec et gouverneur de l'Association dentaire canadienne dont il fut le président en 1932-1933; il fut le premier rédacteur de la revue dentaire mensuelle de l'Association dentaire canadienne, en 1935, où il écrivit les nécrologies des docteurs Arthur Langlois et Alcide Thibaudeau, après sa démission; membre de l'Académie Internationale d'Odontologie de Buenos-Aires (1936), ses confrères le nommèrent président du septième congrès "de l'Association des Dentistes de langue française de l'Amérique du nord", tenu à Québec en 1941; membre honoraire de l'Association dentaire franco-américaine de Boston à la suite de son étude: "La carie dentaire—ses causes—sa prévention (1945)"; aussi membre de l'American Academy of Dental Medicine (1947).

Ses critiques de ma collection de sujets dentaires m'ont été d'un grand secours et grande fut ma surprise de le savoir en plus de ses activités professionnelles, membre actif des clubs Richelieu et Rotary, directeur de l'Institut Canadien, membre de la Société Symphonique de Québec.

Sa mort laisse un vide parmi nous qui sera difficile de combler.

2043 rue Saint-Denis

Journal

OF THE CANADIAN DENTAL ASSOCIATION

A gingivectomy for the general practitioner*

by J. W. NEILSON,** B.A., D.D.S., M.S.

A. INTRODUCTION AND GENERAL STATEMENT

"Dentistry for the General Practitioner" is the apt and challenging slogan of this meeting. In view of this fact and in view of the time available, the presentation will attempt to confine its subject content to a description of only one technique of periodontal surgery. Despite and also because of its relative simplicity, the technique has a wide application in the field of practical periodontal therapeutics. The approach is not an original one by any means and undoubtedly those who have followed clinical periodontia in the recent or even in the distant past will recognize the basic procedure to be described today. Nevertheless, the presentation will endeavor to show that a gingivectomy can be performed with a limited amount of confusion and with a modest armamentarium in any dental office. In discussing

the problem from this utilitarian aspect, it should be realized that the essayist is minimizing some very important pre-surgical and postsurgical aspects of the gingivectomy. Scant attention will be paid to such fundamentals as examination, diagnosis, prognosis and treatment planning. Without a proper perception of these things, surgical intervention is usually ineffectual regardless of the excellence of the technique. That being the case, the assembly is directed to the accompanying bibliography, the perusal of which will provide a more comprehensive understanding of these accessory but essential phases of the surgical problem.

Before proceeding to the illustrated description of the actual surgery it would be in order to include a few words of introduction about the place which this type of gingivectomy should occupy in the therapeutic regimen of the general practitioner. In its most widely accepted definition, the gingivectomy is regarded as curative rather than as a preventive measure. Whether this definition is absolutely justified remains to be seen. The modern gingivectomy is said to have

* Presented at the biennial meeting of the Western Canada Dental Society, Jasper, Alberta, June 17, 1953.

**Associate Professor of Periodontology, School of Dentistry, University of Washington, Seattle, Washington.

originated in Europe in the middle of the eighteenth century, but there is some evidence that the operation was performed by our ancestors over a thousand years ago. Be that as it may, its acceptance in North America dates only from the year 1915 or thereabouts and its original precepts here have undergone several refinements during the past 40 years. These modifications, as applied to the procedure described today, concern themselves largely with the depth to which tissue is removed. In the younger days of gingivectomy it was considered obligatory to remove at least all the soft tissue overlying the alveolar crest and in many instances the crest itself was filed and curetted for various reasons—most of which are presently considered untenable. The more recent concept in regard to the obliteration of the gingival pocket is to remove tissue only to the depth of the deepened sulcus and although there is continuing controversy as to whether the entire epithelial attachment should be removed or not, the author adheres to the school which considers the actual pocket depth the best practical landmark at which to *direct* the incisions.

For much of its modern history, there has been a tendency to regard this form of gingivectomy as a procedure only to be attempted when everything else fails. Of late, this concept has been sensibly revised and the operation is no longer regarded as an heroic "last stand" venture but more as a step which can be applied reasonably early in the treatment plan (although usually to the more seriously involved areas of the dentition).

There is yet another practical indication for the gingivectomy which bears mention in this introduction. There is not too much therapeutic logic in spending expensive, tedious and frequently painful time removing subgingival calculus *if* that same calculus is to be made supragingival through a gingivectomy. For this reason, then, it is suggested that the gingivectomy in practice might oftentimes precede deep scaling rather than follow it. The opposition to this rationale is notable

and undoubtedly sound on an ideal basis. However, the author has presently concluded, after several years of observation, that few patients or dentists are prepared temperamentally or economically to undergo or to undertake the complete type of subgingival scaling which, in this type of case, is so necessary to the eradication (although not to the improvement) of the disease. Therefore, in a concession to pragmatism, it is pointed out that an important indication for gingivectomy, particularly in the general practitioner's office, is its effect of transposing unseen, deep, tenacious subgingival calculus into visible supragingival calculus which may be removed with comparative ease by the dentist. The author would submit the further opinion that if this surgical unveiling of subgingival calculus is not undertaken, the concretion will, in too many cases, never be removed and the periodontium will continue an unabated deterioration. This viewpoint should not be interpreted as a directive to do gingivectomy in all cases indiscriminately or to do it even in selected cases without prior scaling of the teeth—it is simply the degree of subgingival scaling which is under question and undoubtedly the more subgingival calculus removed presurgically, the more presentable will be the surgical fields, in so far as haemorrhage and healing are concerned.

In view of the well recognized but frequently inexplicable individual variation in the response of the oral tissues to periodontal surgery, it might be wise to include herein the further suggestion that in mouths where several areas are involved, the initial gingivectomy may be completed and the result observed for some period of time (1-6 months) before proceeding with periodontal surgery in another area. This period of observation should permit the clinician to ascertain more definitely this particular patient's "response to surgery". The possible wisdom in such a step becomes more and more apparent when one has had the frustrating experience of seeing mouths in which consecutive gingivectomies have been performed without

interruption and in which each surgical result is bad. Might it not be better then to observe only one failure per mouth than several? While these failures may be due to a combination of known and unknown factors, it would seem sensible to keep these reverses to a minimum. If, therefore, the sequence of surgery is suspended following the initial operation, the ensuing period of observation *should* help to separate the "good" from the "bad". The "good" patients should be encouraged to have the surgical sequence continued without further delay. The "bad" patients should only proceed with further gingivectomies in the knowledge that the prognosis is not as favorable as might be desired. One more point about this phase of the problem is that, in the great majority of cases, a waiting period of the duration suggested is not going to cause a marked deterioration by a disease whose pathogenicity is usually regarded as sluggish. On the other hand, it is acknowledged that operative delay does pose problems and does have disadvantages, particularly where the periodontal involvement is severe and widespread. The practitioner is rightfully loathe to allow even a passively destructive disease to go unchecked while he awaits the results of therapy on a somewhat empirical basis. In these advanced cases, then, perhaps it would be wiser to continue the surgical sequence without interruption, in the belief that immediate though possibly temporary improvement is preferable to the postponement of surgical intervention for a period of several weeks.

The author feels that there has been a regrettable aura of mystery and misconception about the paraphernalia necessary for the gingivectomy. This unfortunate circumstance has undoubtedly deterred many able practitioners from undertaking an operation which essentially is not difficult. A most creditable gingivectomy can be performed with only three gingivectomy knives or less. Commencing with these three knives, the dental practitioner can, as a result of his experience, add

other surgical instruments to meet the minor inadequacies created by the initial limitation.

The discerning reader of this introduction may detect in it a certain inconsistency which is imposed upon anyone who compromises with the ideal. There is, however, no element of concession in the seven concluding statements of this section which are as follows:

- (1) The gingivectomy herein described is not and should not be regarded as a mystical, complicated, final act of desperation in the office of the specialist.
- (2) Neither should it be regarded as a panacea for all periodontal disease.
- (3) It is indicated as a part of the routine periodontal treatment of the gingival pocket and it may be employed by the general practitioner of dentistry early as well as late in the treatment plan of many but not all periodontal derangements.
- (4) All patients are not equally good candidates for this type of therapy and it is wise to spend more time selecting suitably responsive cases and thus save mutual embarrassment and disappointment later.
- (5) The armamentarium is not a complex one and the great majority of gingivectomies may be performed satisfactorily with a few instruments in any dental office by any enlightened practitioner.
- (6) The greatest single cause of failure of gingivectomy is not an inadequate instrumentarium nor is it an improper surgical technique. The seeds of failure are much more frequently sown by the dentist who neglects to explain the post surgical home care to the patient, or by the patient who neglects to pursue these instructions.
- (7) It is admitted that patient education in the field of periodontology is rather limited and is progressing somewhat slowly. However, the co-existent

fact that the incidence of periodontal disease is widespread may account for the undeniable demand for adequate periodontal care and therapy (including gingivectomy) by a certain segment of every general practice—whether that practice be located on “Fifth Avenue” or “Main Street.”

Having thus tried to condense in a few sentences the mass of excellent material written on what might be called “The Philosophy of Gingivectomy”, the actual technique may now be described with the aid of the accompanying diagrams and outline (Sections B-F inclusive).

B. GENERAL PURPOSES

1. A healthier oral cavity and periodontium
2. The removal of the gingival pocket* or crater—(often self-perpetuating lesions)
3. The provision of better access for scaling and debridement by the dentist
4. The provision of better access for home care by the patient
5. The provision of better gingival contour for aesthetics or restorations

C. SPECIFIC INDICATIONS

1. Periodontitis simplex
2. Periodontal hyperplasia
3. Chronic necrotizing gingivitis (removal of interproximal crater)
4. “Horizontal” bone loss (accompanying pocket formation)
5. Comparatively shallow, wide, gingival pockets* (or pseudo-pockets) of over 2-3mm. in depth
6. Pre-operative removal of excess tissue in restorative dentistry
7. Following removal of acute inflammation
8. *Cooperative patients*

D. SPECIFIC CONTRAINDICATIONS

1. Simple gingivitis
2. Periodontosis
3. Periodontal atrophy

*As contrasted with the so-called “intrabony pocket.”

4. Acute periodontal abscess
5. Acute necrotizing gingivitis
6. Periodontitis complex (most cases)
7. “Vertical” bone loss
8. Deep, narrow intrabony pockets
9. Presence of acute inflammation or sepsis
10. Aesthetically unacceptable locations (lip line important here)
11. Malposed teeth
12. Excessively mobile teeth
13. Most bi- and trifurcation involvements
14. Cases where caries is rampant and/or active
15. Poor surgical “risks”
16. *Uncooperative patients*

E. ARMAMENTARIUM

1. Basic (see Fig. 1)
 - a. local anaesthetic paraphernalia* (2% Xylocaine HCl with 1:50,000 epinephrine)
 - b. mouth mirror, cotton pliers, periodontal probe* (Williams-Hu-Friedy)
 - c. cotton pellets, surgical sponges (2 x 2 or 2 x 1)
 - d. saliva ejector (a partial substitute for an aspirator)
 - e. periodontal curettes* (Nos. 10 & 11—U. of Wash. Set—American Dental Mfg. Co., Missoula, Mont.)
 - f. gingivectomy knives*
 - (1) Orban 1 and 2 (Colorado Dental Supply, Majestic Building, Denver, 1)
 - (2) Crane-Kaplan No. 4 double-ended (Hu-Friedy)
 - g. small curved surgical scissors (ophthalmic type)
 - h. postsurgical dressing*, liquid and powder (Challies Dental Products, Morrisburg, Ontario)
 - i. heavy spatula and mixing slab

*The item specified has proven helpful in the author's hands and is only one of several available. With experience, every operator will develop his own personal likes and dislikes toward these and other similar items. The manufacturer's name is included herein only for the convenience of the reader. Mention of such products should therefore not be regarded as unqualified endorsement.

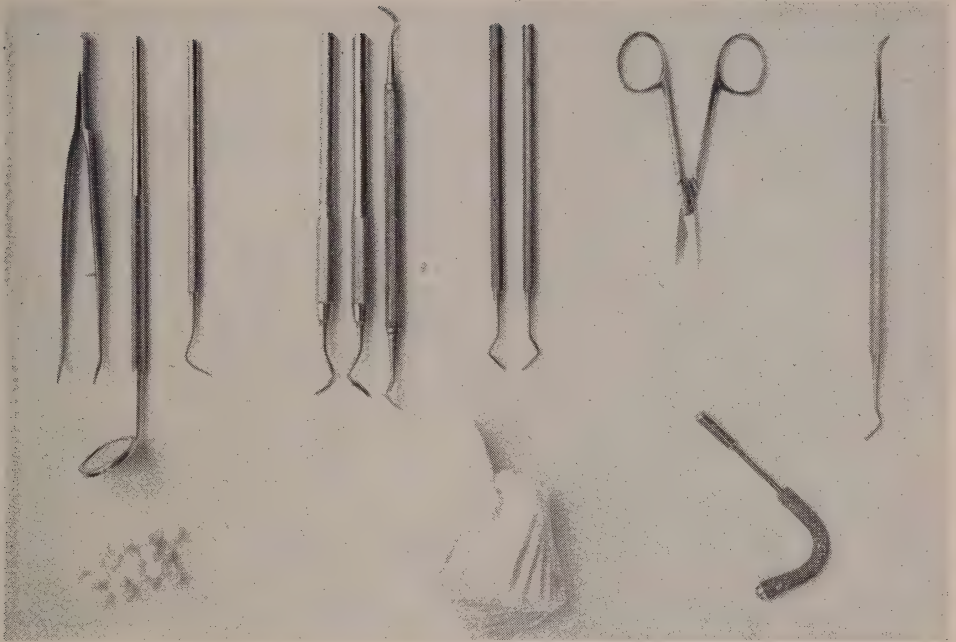


Fig. 1. Armamentarium on surgical tray: from left to right above, cotton pliers, mouth mirror, periodontal probe, gingivectomy knives (3), periodontal curettes (2), scissors, plastic instrument; below from left to right: cotton pellets, sponges, saliva ejector.

- j. plastic instrument or beavertail bur-nisher
- k. trichloroacetic acid (20% solution)
- 2. Additional (useful but not essential)
 - a. electro scalpel* (Radiosurg Scalpel, Electrosurgical Appliances, Philadelphia)
 - b. aspirator (haemorrhage)
 - c. fingernail cuticle clippers (used for festooning surgerized areas)
 - d. indelible pencil (incision lines)
 - e. rubber gloves (asepsis, easier manipulation of dressing)
 - f. medications (adults)
 - (1) racemic epinephrin* (8:100) (haemorrhage during operation) (Pascal Co. Inc.—Seattle 9)
 - (2) tolserol* (.5 grms./50 lbs. weight taken on full stomach $\frac{3}{4}$ hour prior to anaesthetic) (pre-surgical)

(3) codeine sulphate—(30 milligrams every 3 hours) (postsurgical if necessary)

(4) sodium fluoride paste* (equal parts NaF, kaolin, and glycerine) (desensitizer)

F. TECHNIQUE

1. Presurgical

a. At previous appointment(s) the field is cleared of as much filth, debris, calculus and stain as possible (see introductory statement also) (see Figs. 2 and 3)

b. At previous appointment(s) the patient has been taught proper home care procedures and sufficient time has elapsed for these procedures to have their probable optimal effect (see Figs. 2 and 3)

c. Premedication is indicated in apprehensive patients.

*see footnote previous page

*see footnote previous page

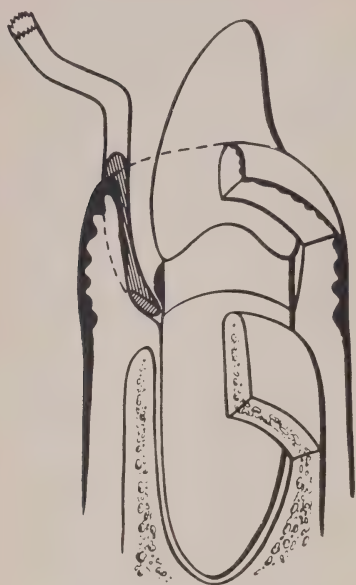


Fig. 2. Curette removing subgingival calculus during presurgical phase of treatment. Note depth of original pocket.

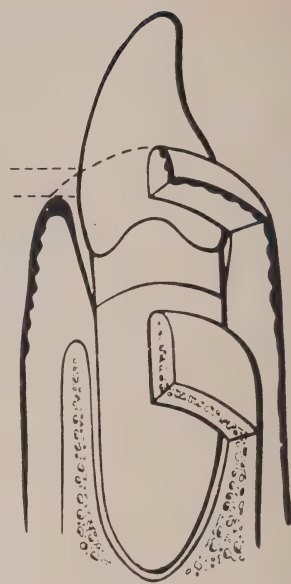


Fig. 3. Presurgical reduction in pocket depth as a result of the removal of subgingival calculus and subsequent home care measures.

d. The area is anaesthetized: adequate but not profound anaesthesia is necessary: infiltration or conduction as indicated or preferred.

e. periodontal dressing is mixed very stiffly with a heavy spatula: approximately 8 drops liquid to 1 level teaspoonful powder for average case: lay aside a roll of dressing for lingual and cut remainder into triangles, one for each facial interproximal space (see Fig. 4).

2. Surgical

a. Plotting pocket depth (facially, then lingually) (see Fig. 5)

(1) use periodontal probe as marker
(2) pocket depth most reliable landmark

(3) make bleeding points at pocket depths (3 facial bleeding points and 3 lingual bleeding points per tooth)

(4) connect points with indelible pencil line if desired

b. Line of initial incision—very important (see Fig. 6)

(1) make incision apical to bleeding points in order to ensure a properly bevelled contour

(2) make incision apical to the gingival crest and into an interproximal space: *do not* make it from the free gingival margin

(3) insert knife well into the inter-

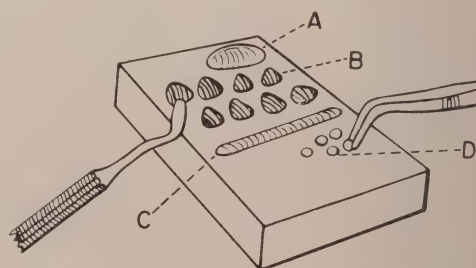


Fig. 4. Surgical dressing mixed on slab (A); triangular pieces of dressing (B); lingual strip (C); cotton pliers and moist pellets to aid during insertion (D).

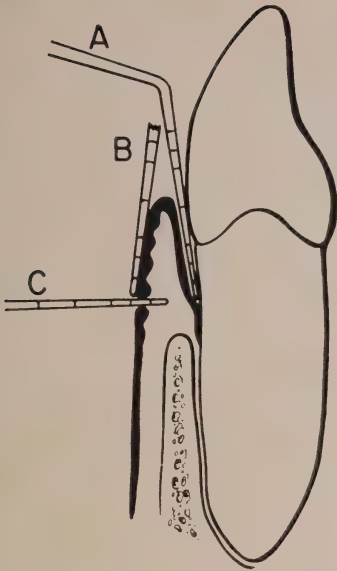


Fig. 5. The plotting of pocket depths. The probe is inserted into the pocket (A). The probe is withdrawn and placed on the mucosal surface to a similar depth (B). The probe is rotated 90° and plunged into the mucosa, thus creating a bleeding point.



Fig. 7. Wherever possible the entire excised tissue is "teased off" with a periodontal curette following the union of facial and lingual incisions interproximally. The removal of loose and attached bits of tissue (and calculus) is then undertaken with the curette.

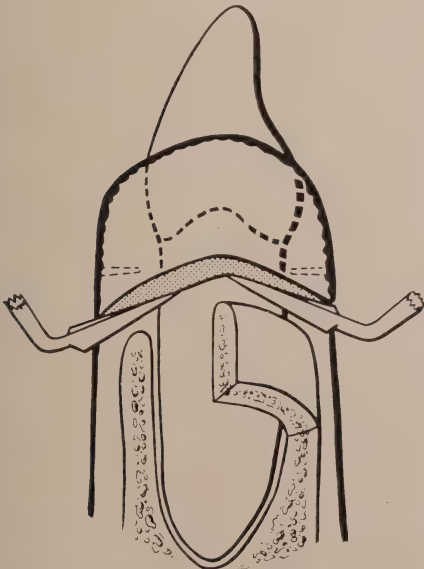


Fig. 6. The line of initial incision is outlined here. Note that the incision is bevelled from a point apical to the bleeding point, that it is made interproximally, that it extends well into the interproximal tissue and that it is well below the gingival crest.

proximal space before proceeding along line of incision

c. Progress of incision (see Figs. 6 and 7)

(1) maintain bevel throughout progress

(2) use a continuous slicing incision

(3) use teeth as "backings" against which incision is made but avoid dulling the instrument in the process

(4) finish facial before incising lingually

(5) in making the lingual incision, try to terminate it interproximally in the facial incision

d. Completion of incision (see Figs. 7, 8 and 9)

(1) incisions usually terminate in the facial and lingual gingival margins and not in an interproximal area

(2) "tease off" and lift away entire excised tissue (facial and lingual) with curette if possible, rather than with knife: *do not tear off large sections of tissue, however* (see Fig. 7)

(3) use curette to "pick off" loose bits of tissue, etc. (see Figs. 7 and 9)

(4) in case of an improper initial bevel, start the new and corrected bevel in an interproximal space 1.2 mm. apicalward from line of previous incision (see Figs. 8 and 9)

e. Other points of interest

(1) obviously, a septic technique should be followed as closely as possible

(2) ideally, 1/6 or 1/4 mouth done at

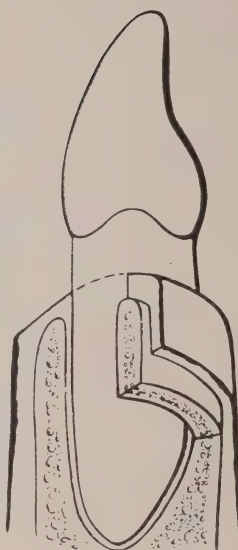


Fig. 9. The surgerized area is now ready for the reception of the post-surgical dressing.

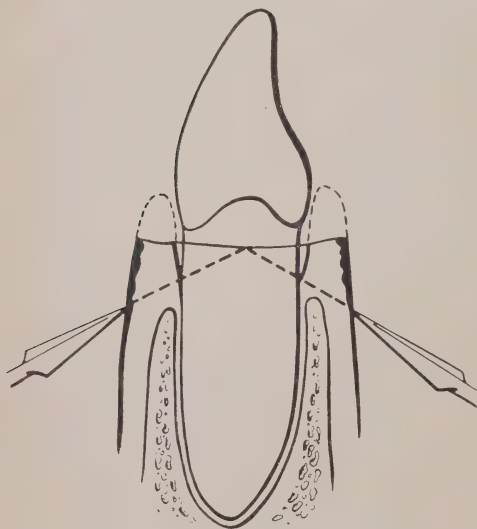


Fig. 8. In this figure an incorrect initial incision has been made. In such an event the corrective incision is not made from the freshly incised surface but is made more apically as a completely new incision into previously undisturbed tissue.

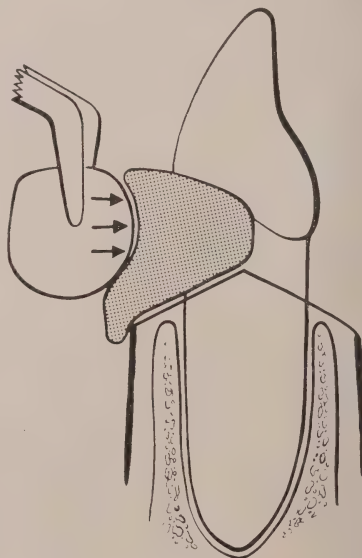


Fig. 10. The use of the moistened cotton pellet ensures close adaptation of the dressing to the area of surgery.

time: more may be undertaken in unusual circumstances

(3) frequency of operation may range from 1-5 weeks, depending on individual circumstances (see introductory statement also for contraindication)

(4) more meticulous scaling of teeth may be undertaken day of surgery or later: practical advantages in either procedure

3. Postsurgical

a. Insertion of initial dressing (see Figs. 4, 10, 11, and 12)

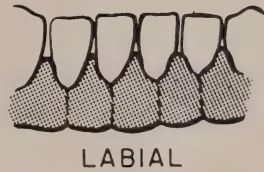
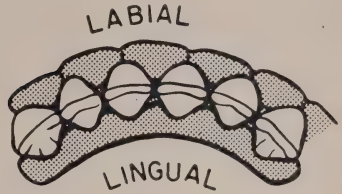


Fig. 12. Two views of the completed dressing, showing lines of fusion between the various pieces of the dressing. Note the single lingual dressing in contrast to the several labial "triangles" employed.

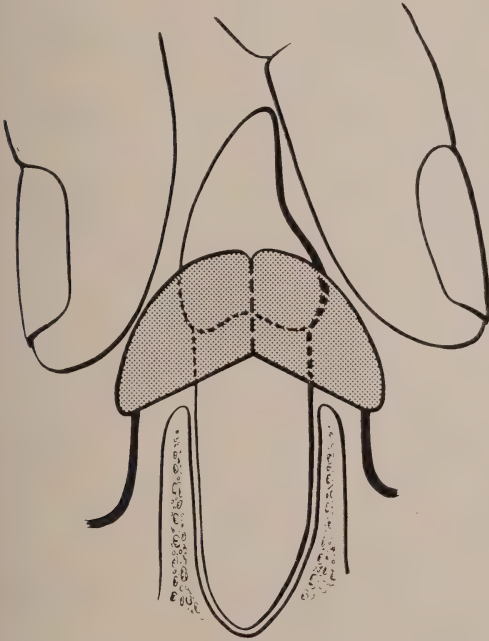


Fig. 11. The use of the fingers (moistened) also ensures close adaptation of the dressing to the area of surgery. Note as well the dressing's sufficient but not over extension, its reasonable aesthetics, its smooth exterior and its clearance of occlusion.

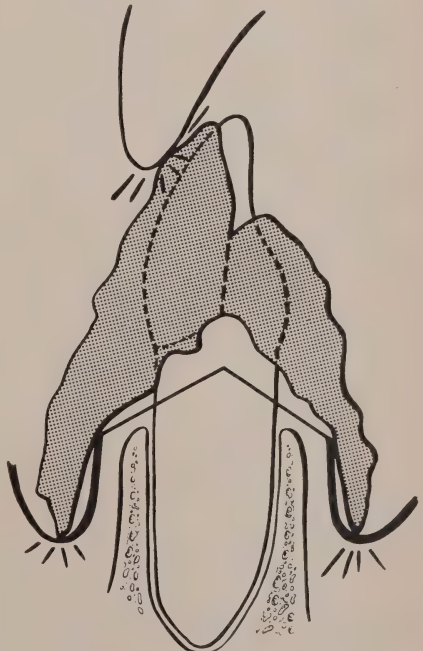


Fig. 13. An improperly placed dressing, illustrating the bad features of poor adaptation, poor aesthetics, overextension, occlusal interference, and rough exterior.

(1) pick up triangular piece of dressing with plastic instrument or beavertail burnisher and from facial, deposit dressing in interproximal space (see Fig. 4)

(2) repeat in other interproximal spaces (see Fig. 12)

(3) with moist cotton pellet (and moistened finger) adapt dressing closely to interproximal area, contour dressing away from musculature and occlusion and present a smoothly finished facial surface (see Fig. 10 and 11)

(4) place remaining roll of dressing on lingual and with cotton pellet adapt and contour roll to proper position: final digital pressure unites it interproximally with previously placed facial dressing (see Figs. 10, 11 and 12)

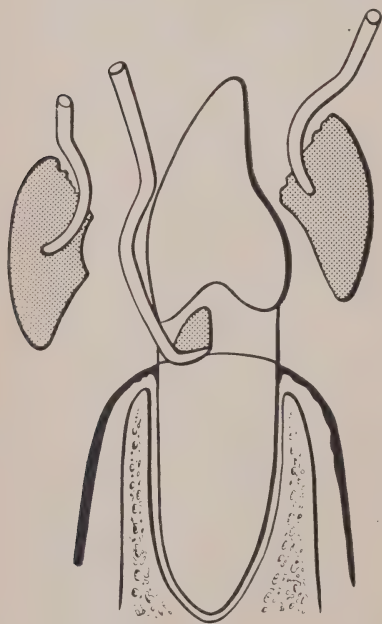


Fig. 14. The removal of a dressing with the curettes and the subsequent removal of any remaining interproximal fragments of the dressing. These fragments should not be overlooked but should be specifically noted and withdrawn.

b. Pitfalls during insertion (see Fig. 13)

(1) failure to secure close adaptation to surgerized area (looseness, overgranulation and pain)

(2) failure to cover entire surgerized area (pain and overgranulation)

(3) failure to clear occlusion (pain and dislodgment)

(4) failure to clear musculature (impingement, ulceration and pain)

(5) failure to present a smooth facial and lingual surface (irritation and pain to mucosa or tongue)

(6) failure to issue postsurgical directions

c. Postsurgical instructions to patient

(1) postsurgical analgesic (seldom required)

(2) do not masticate on surgerized area

(3) do not brush surgerized area

(4) if dressing falls or breaks off, report immediately: if this loss of

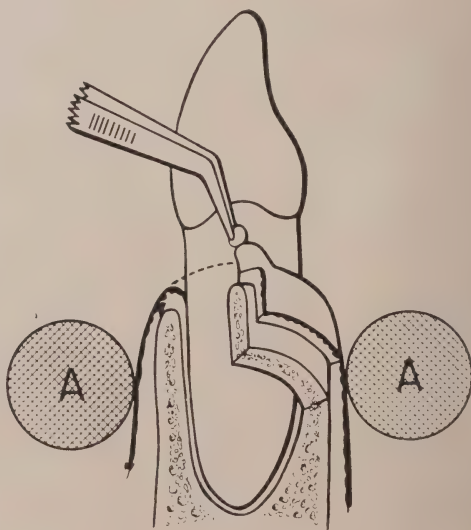


Fig. 15. The application of trichloroacetic acid to an area of overgranulation following the removal of the dressing. Isolation of area with cotton rolls (A).

dressing occurs at an inconvenient time, direct patient to keep area covered with some substitute such as chewing gum until a new dressing can be properly placed as soon as possible thereafter

(5) if muscular impingement (ulcer) develops, report immediately

(6) if undue pain develops and/or persists, report immediately.

(7) if regional lymphatic tissues involved, report immediately

(8) report for change in 2-7 days (advantage in early change of initial dressing)

(9) if haemorrhage persists or develops, report immediately

d. Changes and removal of postsurgical dressings (see Figs. 14 and 15)

(1) anaesthesia seldom indicated if reasonable care observed

(2) remove with curettes by breaking away facially and lingually (see Fig. 14)

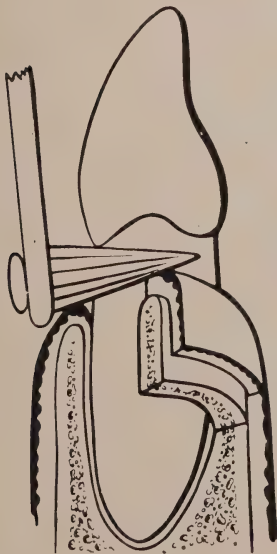


Fig. 16. The application of considerable post-surgical pressure and stimulation to the area of surgery with the rubber tip.

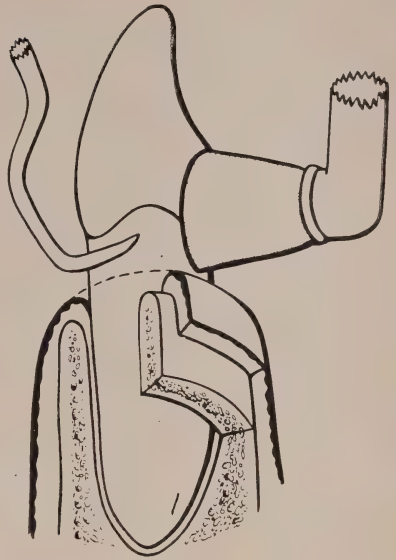


Fig. 17. The regular and repeated post-surgical use of scalers and polishing agents on the tooth.

(3) clear interproximal spaces with curettes (see Fig. 14)

(4) irrigate area with warm water

(5) examine for bulbous overgranulations (see Fig. 15)

(6) if overgranulated, isolate and dry area, apply 20% trichloroacetic acid, leave 10-20 seconds, flush off with water: USE CAREFULLY (see Fig. 15)

(7) dry area and replace dressing as previously directed in F-3-a

(8) dressings should cover area (with 2-3 changes) for 14 days in average case

(9) AT TIME OF REMOVAL OF LAST DRESSING, the patient is given express instructions on home care, emphasis being placed on the considerable amount of time, care and pressure needed to prevent tissue from "billowing up" to its former undesirable position (see Fig. 16)

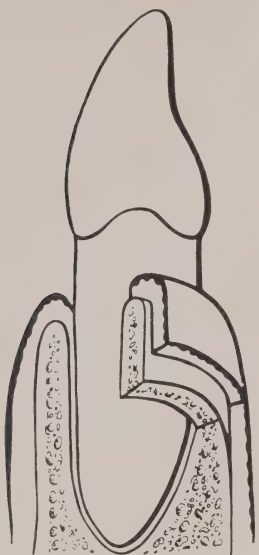


Fig. 18. The area following surgery. Note absence of pockets and presence of normal contour in a more apical position. Constant vigilance and care by both dentist and patient should maintain these results.

e. Later care

(1) patient should always be observed 4-5 weeks after surgery when polish and final scaling also may be undertaken (see Fig. 17) recheck home care as well

(2) if newly exposed tooth surface is sensitive, observe for a reasonable period as sensitivity is often transitory; if no improvement, use a desensitizing agent (burnished NaF paste is one approved method), a desensitizing dentifrice or a desensitizing mouthwash.

(3) A GINGIVECTOMY IS ONLY AS SUCCESSFUL AS THE POST-SURGICAL CARE BY THE DENTIST AND BY THE PATIENT (see Fig. 18)

BIBLIOGRAPHY

1. Ball, E. L. Advantages and disadvantages of surgical periodontia. *J. Periodont.* 9:71-77, July 1938.
2. Buck, W. Surgical treatment of pathologic pockets. *D. Digest* 39:299-301, Aug. 1933.

3. Bernier, J. L. and Kaplan, H. Repair of gingival tissue after surgical intervention. *J.A.D.A.* 35:697-705, Nov. 15, 1947.
4. Crane, A. B. and Kaplan, H. The technique and results of surgical pyorrhea treatment. *D. Digest* 38:3-11, Jan. 1932.
5. Fish, E. W. Bone infection. *J.A.D.A.* 26:691-712, May 1939.
6. Gilson, M. Surgical treatment of periodontal disease. *J.A.D.A.* 44:733-742, June 1952.
7. Glickman, I. Clinical periodontology. 1953. W. B. Saunders Co., Philadelphia, 1019 p. (p. 725-756).
8. Goldman, H. M. Gingivectomy: indications, contraindications and method. *Am.J.Orth. and Oral Surg.* (Oral Surg. Sect.) 32:323-326, May 1946.
9. ———. *Periodontia*. Ed. 2, 1949, C. V. Mosby Co., St. Louis, 611 p. (p. 411-429).
10. ———. Development of physiologic gingival contours by gingivoplasty. *Oral Surg., Oral Med. & Oral Path.* 3:879-888, July 1950.
11. Kaplan, H. and Milobsky, L. A surgical procedure for periodontal pocket elimination: revised Crane-Kaplan technique. *Oral Surg., Oral Med. and Oral Path.* 4:546-560, May 1951.
12. Leonard, H. J. Appraisal of developments in periodontology from 1901-1950. *J. Periodont.* 22:107-119, April 1951.
13. Merritt, A. H. Surgery's place in the treatment of periodontoclasia. *J.A.D.A.* 29:771-773, May 1942.
14. ———. The historical background of periodontology. *J. Periodont.* 10:7-25, Jan. 1939.
15. Miller, S. C. Textbook of periodontia. Ed. 3, 1950, The Blakiston Co., Philadelphia, 900 p. (p. 243-259).
16. Ogun, W. Electrosurgery in dentistry. *D. Digest* 48:411-419, Sept. 1942.
17. Orban, B. Gingivectomy or flap operation? *J.A.D.A.* 26:1276-1283, Aug. 1939.
18. Orban, B. To what extent should the tissue be excised in a gingivectomy? *J. Periodont.* 12:83-88, July 1941.
19. ———. Indications, technique and postoperative management of gingivectomy in the treatment of the periodontal pocket. *J. Periodont.* 12:89-95, July 1941.
20. Orban, B. and Archer, E. A. Dynamics of wound healing following elimination of gingival pockets. *Am. J. Orthodont. & Oral Surg.* (Oral Surg. Sect.) 31:40-54, Jan. 1945.
21. Orban, B. Surgical gingivectomy. *J.A.D.A.* 32:701-708, June 1945.
22. ———. Periodontal disturbances: practice management. *J.A.D.A.* 35:545-556, Oct. 1947.
23. Ramfjord, S. Gingivectomy—its place in periodontal therapy. *J. Periodont.* 23:30-38, Jan. 1952.
24. Ritchey, B. and Orban, B. The periodontal pocket. *J. Periodont.* 23:199-213, Oct. 1952.
25. Saghlian, L. M. Electrosurgery in the mouth. *D. Digest* 46:20-28, Jan. 1940.
26. ———. Electrosurgery and collateral treatment. *D. Digest* 46:312-318, Sept. 1940.
27. ———. Electrosurgical resection in the treatment of periodontal disease. *J.A.D.A.* 30:1666-1673, Nov. 1943.
28. ———. Periodontosis: treatment by surgical and electrosurgical gingivoplasty. *J.A.D.A.* 38:67-78, Jan. 1949.
29. ———. Electrosurgical gingivoplasty. *Oral Surg., Oral Med. & Oral Path.* 2:1549-1557, Dec. 1949.
30. Ward, A. W. Surgical eradication of pyorrhea. *J.A.D.A.* 15:2146-2155, Nov. 1928.

Improved radiographic results in cephalometry through the use of high Kilovoltage*

by LESLIE J. CARTWRIGHT and EGIL HARVOLD

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The extensive use of roentgenograms of the head in the study of cranial morphology has raised the question as to possible improvements in radiographic technique.

It is essential to obtain a detailed rendering of the skull structure including the highly calcified dental tissues, the bones in the base of the skull, the nasal bones and the anterior nasal spine, as well as certain areas of soft tissue. During the period 1952-1954 the method described below was evolved and has been found very satisfactory. The focal-film distance (60"), required to minimize enlargement and distortion, makes a high Kv. technique desirable, both from the standpoint of air filtration and in order to keep the exposure time short. The specifications should therefore be as follows: Generator capable of delivering 50 ma. at 120 Kv.; timer calibrated in twentieths and tenths of a second; generator fitted with a line compensator for accurate kilovoltage delivery; rotating-anode tube mounted on a rigid non-adjustable support; non-adjustable (as to height) cephalostat 60" distant, so aligned that central ray passes exactly through metal centres of ear pieces; Bucky dia-

phragm to accommodate 10 x 12 cassette fitted with a 16:1 grid; cephalostat fitted with ear-pieces and nose-support and adjustable for lateral, right and left 45° oblique and posterior-anterior positions of the head. The x-ray tube is fitted with a cylinder 9" long and 2½" in diameter. More important, however, in the reduction of secondary radiation is the insertion of a lead mask in front of the 1½ mm. aluminum filter. The mask is ¼ of an inch thick and has an opening of approximately 1 sq. cm. cut in it, this being the minimum size to permit the x-ray beam to cover the 10 x 12 film at 60". The cassettes have a lead foil backing (1/16") beneath the lower intensifying screen, also for the purpose of reducing secondary radiation.

The exposures are as follows:

120 Kv. 67" TFD 16:1 grid

Tube-port mask 1 sq. cm.

1½ mm. aluminum filter

Kodak blue brand films

5 min. development (in Kodak "Fast" 3½ min. developer)

Par speed screens

Cm. = centimeter measurements across mandible for lateral projection 45° across mandible for oblique projection

From below occiput to below nose for posterior-anterior projection

T.M.jt. = temporo-mandibular joint — exposure time required for this area.

The use of high definition intensifying screens requires approximately 3.3 times the ma./sec. given in this table.

*Aided by a grant from the National Health Grants Administration, Ottawa, Canada.

TIME EXPOSURE TABLE

Small (3-6 yrs.)					Medium (6-10 yrs.)		Big (11 yrs. and up)	
Cm:	LATERAL PROJECTION				LATERAL PROJECTION		LATERAL PROJECTION	
9	50 ma.		25 ma.		25 ma.		25 ma.	
	3/20 sec.		7/20 sec.		7/20 sec.		4/10 sec.	
	4/20 sec.		4/10 sec.		4/10 sec.		4/10 sec.	
	4/20 sec.		4/10 sec.		4/10 sec.		5/10 sec.	
12							6/10 sec.	
Cm:	45° OBLIQUE PROJECTION				45° OBLIQUE PROJECTION		45° OBLIQUE PROJECTION	
10	50 ma.		25 ma.		25 ma.		25 ma.	
		T.M.jt.		T.M.jt.		T.M.jt.		T.M.jt.
	2/10 sec.	5/20 sec.			9/20 sec.	6/10 sec.	5/10 sec.	6/10 sec.
	2/10 sec.	5/20 sec.	4/10 sec.	5/10 sec.	9/20 sec.	6/10 sec.	5/10 sec.	7/10 sec.
12	5/20 sec.	3/10 sec.	5/10 sec.	6/10 sec.	5/10 sec.	6/10 sec.	5/10 sec.	7/10 sec.
13	5/20 sec.	3/10 sec.	5/10 sec.	6/10 sec.	5/10 sec.	6/10 sec.	6/10 sec.	8/10 sec.
Cm:	POSTERIOR-ANTERIOR PROJECTION				POSTERIOR-ANTERIOR PROJECTION		POSTERIOR-ANTERIOR PROJECTION	
13	50 ma.		25 ma.		25 ma.		25 ma.	
	5/20 sec.		5/10 sec.		6/10 sec.		6/10 sec.	
	5/20 sec.		5/10 sec.		6/10 sec.		7/10 sec.	
	3/10 sec.		6/10 sec.		7/10 sec.		8/10 sec.	
16					7/10 sec.		9/10 sec.	

This table is prepared on the basis of 2000 radiographs

Fast exposures (using 50 ma.) tend to give slightly less brilliance than slow exposures (25 ma.), owing to increased secondary radiation.

In testing the various makes of films we found that if there is an excess of blue tint in the film base it seems to reduce the contrast and render it more diffi-

cult to discern fine detail.

Development is continued for 5 minutes (using Kodak Rapid Developer) instead of the usual 3½ minutes, thus bringing out all that is in the films. These films are remarkably brilliant and have not the muddy appearance commonly associated with high Kv. technique.



Figure 1. Conventional projection for lateral radiograph. The film shows details as spheno-occipital cartilage in youngsters, the occipital condyles, the teeth, as well as the boundary of the soft tissue.



Figure 2. The oblique projection. The angle between the mid-sagittal plane and the film is 45° . The films, one of each side, show the dental arch relationship, the position and eruption direction of the teeth in the lateral parts of the jaw. The temporo-mandibular joint is usually clearly visible.



Figure 3. Equipment used in the Hospital for Sick Children

REFERENCES:

Trout, E. Dale, Graves, D. E., and Slauson, D. B.: May 1949 (*The Focal Spot* 7:107-122, 1950) Clark,

May 1949 (*The Focal Spot* 7:107-122, 1950)

K. C.: An Introduction to High-Voltage Technique. *Radiography* XIX:2134, 1953.

Dental surgery as related to hospital services

by HENRY L. FREELAND,* D.D.S., F.A.C.D., Calgary, Alberta.

In the dispensation of health services by any branch of the healing professions, unlimited opportunities have always existed to serve the community associated at all times with a related challenge to serve intelligently; and speaking of medical people in particular, John Bunyan wrote almost three centuries ago "Physicians get neither name nor fame by the pricking of wheals or picking out thistles or by laying of plasters to the prick of a pin; every old woman can do this. But, if they would have a name and a fame, and if they will have it quickly, they must do some great and desperate cures. Let them fetch one to life that was dead; let them recover one that was born blind to see, or let them give wits to a fool—these are notable cures, and he that can do thus, if he doeth it first, he shall have the name and the fame that he deserves—he may lie abed till noon".

The members of my profession do not expect to win name or fame, or to achieve spectacular results in this hospital, and certainly none that I know can afford to lie abed until noon, but we do expect, by and with the support and co-operation of the medical profession, to accept this opportunity and this challenge, and to expand and develop Dental Surgery in this great health institution as an extension of our contribution to the health of our community.

General Medicine and Surgery deal with the physiological, psychological and pathological field of the human organism as a whole; Dental Surgery is a highly specialized service confined to the hard and soft tissues and structures of the oral cavity. In the lay mind, and I fear also in the minds of some of our medical

associates, a misconception has been allowed to develop to indicate that the field of dental surgery begins and ends with the filling of teeth, the extraction of teeth, and the insertion of mechanical appliances. Important as these phases of dental practice are, they represent merely a segment, although an imposing segment, of the whole field of dental treatment and service. For a century and a half, dentists have been obliged by the ravages of oral diseases and the subsequent loss of teeth, to concentrate in this manner upon the restoration of oral function. That day has not passed but it is passing; we have now come through the evolution of dental research and through closer liason with our medical associates to that point of progress where it becomes obligatory to corelate our efforts more closely with those of general medicine, and to consider our specialized responsibilities as a component part of health service related to the whole human organism.

In the January, 1951, issue of the *Journal of Oral Surgery* of the American Dental Association, Joseph L. Bernier, D.D.S., M.S., states: "Oral diagnosis cannot be considered apart from general disease processes which are responsible for the patient's deviation from normal. This involves extensive and continuous study. It was an unfortunate situation when, at an earlier time in dentistry, we thought of oral diagnosis as centred about the decisions referable to the construction of dentures and bridges. These matters are, of course, extremely important, but we have now come to realize that the most important aspect of oral diagnosis is that which deals with the individual as an organism and involves the understanding, detection and treatment of diseases that are often unassociated with the mechanics of restoration. The lips, the tongue, the floor of the

*Chief of the Division of Dental Surgery in the Department of Surgery, Calgary General Hospital.

mouth and perhaps the major salivary glands, and maxillary sinus are certainly geographically within the field of dentistry". In the same publication, Reed O. Dingman, M.D., D.D.S., Professor of Oral Surgery at the University of Michigan, Ann Arbor, states: "In order to give the patient the best possible service in the management of diseases of the mouth and associated structures, treatment should be instituted by the specialist best qualified by training and experience to handle the situation, whether he be physician or dentist. The dental oral surgeon, in order to hold his own or to gain ground in the management of these problems, which by virtue of his training and experience he is best able to handle, must be a progressive individual."

The legitimate field of Dental Surgery to be developed in this hospital should include the following services:

First: The surgical removal of teeth. This does not begin and end with the forcible removal of teeth from their alveolar sockets; it includes the proper surgical treatment and repair of the alveolar ridges themselves to insure maximum success in the insertion of dentures later. This is important, how important only those of you who are forced to use ill-fitting dentures will be able to understand.

Second: The reduction and treatment of maxillary and mandibular fractures. The techniques and procedures of fracture treatment, to insure best results, are dependent upon a thorough knowledge of the fundamentals of dental occlusion and the limitations of function of the temporo-mandibular articulation. Particularly is this true of the edentulous patient who will have to wear dentures. While it is a fact that a fractured mandible will heal and new bone will regenerate even if all principles of occlusion are ignored, the end result of improper functioning of the mandible is no more to be condoned than would be malpositioning of a fractured femur.

Third: The surgical removal of impacted, aberrant and supernumerary teeth in a dental operating room completely equipped to provide all the necessary assistance to the dental operator in familiar surroundings. Given these advantages such surgical procedure is best handled in the hospital where the required pre-operative and post-operative care and treatment may be given the patient.

Fourth: The surgical treatment of follicular and radicular cysts, odontomas and fibrous osteomas, Torus Palatinus abnormalities of the palate, periosteal tumors such as epulis and benign tumors of dental origin. The removal of foreign bodies, fractured root-ends of teeth from the maxillary sinus and the repair of antro-oral fistulas.

Fifth: The recognition and early detection of malignant lesions of the oral cavity. Many malignant neoplasms of the oral tissues are first seen by the dentist. These lend themselves to successful treatment due to their accessibility. These facts point up an opportunity and a challenge to both physicians and dentists. They also illustrate the invasion and overlapping of both fields of endeavour, and the pressing need for closer co-operation in the interests of the patient. If it is a fact, and I am sure it is a fact, that a high percentage of these malignancies are first seen by the dentists, then it follows that the many thousands of patients seen yearly by the one hundred dentists of this community expect and demand that we evaluate oral conditions that may be malignant, speedily and intelligently. If this hypothesis is sound, more intensive co-operation in the atmosphere of this hospital between physicians and dentists must inevitably result in a quickening of our sense of responsibility in this field.

To recapitulate: The inclusion of a dental staff in this hospital provides Dental Surgery here with these opportunities:

1. To promote and develop a more com-

plete dental service to the people of the community, with more adequate correlation of dental conditions and treatment to the human organism as a whole.

2. To develop progressively the practice of oral surgery in the dental field in this hospital.

3. To accomplish these results, with mutual advantage, by closer contact and association with the members of the medical profession.

I look forward to the day when all the required facilities may be provided in this hospital for the proper care and treatment of these conditions by dental surgeons who are trained and competent to treat them in harmonious co-operation with all the associated services of the staff of this hospital.

We recognize that medical and dental

practices are not private enterprises but are public responsibilities. The future of dental surgery, as of medicine, depends upon the evolution of professional practice and the enforcement of the highest professional and personal standards.

We recognize, with all humility, the enormous gap between the average level of dental care in this community and the optimal level, but we hope, with your assistance, to reduce that disparity in the course of time.

In the light of our expanding knowledge the rightful demands of our patients force our attention to the intelligent co-operation of our respective professions, and here in this beautiful institution, under the benevolent leadership of Dr. Bradley, we who represent Dental Surgery pledge our support to that principle.

The importance of fluoridation cannot be over-emphasized. To provide dental treatment to all school-children of this Province would require approximately all the dentists who are now registered in British Columbia to be working full time for the first year on such a programme. Even for the second and subsequent years, such a programme would require approximately one-third of the total time of all dentists of the Province. Yet school-children represent only 15 per cent of the total population. However, if all community water-supplies were fluoridated, and these serve 82 per cent of the population, it is calculated that only 16.5 per cent of the total dental time would be required to maintain this 15 per cent of our population in dental health. Therefore, for the first time, it can be foreseen that the total need for dental treatment can eventually be met.

*from Report of Division of Preventive Dentistry,
Department of Health and Welfare, B.C.*

Although not specifically addressed to dentists, the following ten rules for membership in the 'Coronary Club' may be of interest to the dental profession:

1. Your job comes first; personal considerations are secondary.
2. Go to the office evenings, Saturdays, Sundays, holidays.
3. Take the briefcase home on evenings you don't go to the office. This way you can review completely all troubles and worries of the day.
4. Never say no to a request; always say yes.
5. Accept all invitations to meetings, banquets, committees, etc.
6. Don't eat a restful relaxing meal—always plan a conference for the meal hour.
7. Regard fishing, hunting, golf, bowling, billiards, cards, gardening as a waste of time or money.
8. Believe it's poor policy to take all the vacation allowed you.
9. Never delegate responsibility to others, carry the entire load yourself at all times.
10. If your work calls for travelling, work all day and drive all night to keep the next morning's appointment.

Francis J. Curtis, from an address to the American Chemical Society.

Report of the National Research Council's Associate Committee on Dental Research

by S. J. COOK, Secretary.

Meeting in the National Research Building at Ottawa on Monday and Tuesday, 1—2 March, 1954, the Associate Committee on Dental Research received reports of the year's work on sixteen projects. For 1954-55 the Committee made 14 awards of grants-in-aid of research having a total value of \$23,345, and recommended the granting of two dental research fellowships of \$3000 each.

Changes in membership of the Committee effective 31 March include the retirement of the Chairman, Dean Roy G. Ellis, of Toronto, and of Dean E. Charron, University of Montreal, both of whom have served continuously on the Committee since its inception in 1945.

Also retiring, are Dr. John D. Hamilton, pathologist, Toronto, who has served three years as a member and Mr. S. J. Cook, of the National Research Council, who has been secretary of the Committee since it was formed.

New faces around the members' table this year will include: Dr. Chas H. M. Williams, Department of Periodontology, University of Toronto, who succeeds Dean Ellis as a member; Dr. Jean-Paul Lussier of the Faculty of Dental Surgery, University of Montreal, appointed in place of Dean Charron; and Dr. W. S. Hartroft of the Banting and Best Department of Medical Research, Toronto, who has been named to follow Dr. J. D. Hamilton.

Each of these three is being appointed for a three-year term to 31 March, 1957.

Reappointed for a similar period are Dr. A. C. Burton, biophysicist, University of Western Ontario and Dr. J. B. Macdonald, chairman of the division of research, Faculty of Dentistry, at Toronto.

The new secretary is Dr. J. B. Marshall, chief of the awards office of the National Research Council.

Two applications for Dental Research Fellowships were given approval by the Committee and recommended to the National Research Council. Dr. Clifford Reynolds, of Willowdale, Ont., a graduate in dentistry from Toronto received an award of \$3000 for research in pharmacology as applied to dentistry, to be carried on under the direction of Dr. J. K. W. Ferguson at Toronto. Dr. Reynolds has given up private practice to enter research.

The other fellowship winner is Dr. Ernest Maartin Madlener, now working with Dr. J. B. Macdonald at Toronto. He is of Dutch nationality and has been in Canada since April, 1951. He has obtained the D.D.S. degree with honours from Toronto; he also won the Ed Green Bursary and the James Branston Willmott Scholarship in his second year. He had previously graduated with honours from the School for the Training of Dentists, Soerabaya, Netherlands East Indies, in 1940; and from Ryksuniversiteit, Utrecht, Holland, again with honours. His military service includes three-and-a-half years in the Netherlands Dental Corps.

It was announced at the Committee meeting that a signal honour has been conferred on one of the members by Her Majesty, the Queen. Brigadier E. M. Wansbrough, Director General of Dental Services, Royal Canadian Dental Corps, has received the distinction, "Queen's Honorary Dental Surgeon." To mark this award, Brig. Wansbrough is now permitted, as one of four members of the military services in Canada, to wear the Royal cypher, E II R on his shoulder badge. Congratulations were extended to the recipient by the Committee.

Research projects which are to be given support from the Committee in 1954-55 are as follows:

<u>Project No.</u>	<u>Grantee</u>	<u>Subject of Research</u>	<u>Amount of Grant</u>
RENEWALS			
DR 1	Dr. J. J. Rae, Dept. of Chemistry, University of Toronto	Chemical mechanisms in dental caries	1080
DR 13	Dr. M. Doreen Smith, Dept. of Food Chemistry, University of Toronto	Fluoride content of dentin, enamel and alveolar processes of teeth from Sarnia, Brantford and Stratford	1625
DR 22	Dr. Charles H. Best, Banting and Best Dept. of Medical Research, University of Toronto	Investigation of the mechanism of repair of the supporting structures of the teeth and factors affecting the reparative process	4200
DR 23	Dr. C. P. Leblond, Dept. of Anatomy, McGill University	Entry of phosphate, carbonate and calcium ions into teeth, as shown with the help of radioactive elements	3500
DR 35	Dr. J. B. Macdonald, Chairman, Division of Dental Research, University of Toronto	Bacteriology of periodontal disease I. Experimental fusospirochetal infection with mixtures of pure cultures	2300
DR 37	Dr. H. Jenkins, Dept. of Orthodontics, University of Toronto	Further studies in the electromyography of the head, face and neck	225
DR 43	Drs. S. G. Davis and H. D. MacLean, University of Alberta	Electropotentials caused by dental alloys	250
DR 50	Dr. J. B. Macdonald, University of Toronto	The cultivation and characteristics of <i>Bacteroides nigrescens</i>	400
DR 51	Dr. R. L. deC. H. Saunders, Professor of Anatomy, Dalhousie University	Study of human dental pulp blood vessels by X-ray microangiographic methods	1870
DR 52	Dr. L. F. Bélanger, Professor of Histology and Embryology, University of Ottawa	Mechanism of bone and tooth formation in the light of histochemistry and autoradiography	3470
DR 54	Dr. B. N. Kropp, Faculty of Medicine, Queen's University	Development of a rapid method for grinding thin sections of plastic-embedded teeth	640
NEW APPLICATIONS			
DR 55	Dr. M. R. Culbert, Dept. of Orthodontics, University of Toronto	A cephalometric study of maxillary growth as related to statural growth	175
DR 56	Dr. D. J. E. Mitchell, Dept. of Orthodontics, University of Toronto	Comparative study of palatal height, width and length in ancient and modern crania	400
DR 57	Dr. G. Nikiforuk, Associate Professor of Pedodontics, University of Toronto	The amino acid composition of enamel protein using paper chromatography	3200

The date of the next meeting of the Committee was tentatively set for Monday, 25 October, 1954, in Ottawa.

ABSTRACTS

The Preventive Role of Occlusal Balancing of the Natural Dentition

by MAX B. WINSLOW, D.D.S., Detroit.

Journal of the American Dental Association, March 1954.

Certain of the essential principles of occlusal balancing are:

1. The patient's jaws must be in centric relation. Centric relation may be defined as the most retruded position of the mandible from which lateral excursions can be made. A mandibular retruder is of value in determining whether the patient has an acquired centric relation, provided care is taken not to use too much force and over-retrude the mandible.

2. Premature contacts on the teeth must be corrected in centric, right and left lateral and protrusive relations. If a tooth is in premature contact in both centric and eccentric relations, the cusp of the interfering tooth must be ground. If the tooth is in premature contact in centric relation only, the fossa of the

opposing tooth should be deepened. If the tooth is in premature contact in eccentric relation only, the guiding inclined plane of the opposing tooth should be ground.

3. In grinding, harmonious relations between opposing teeth should be established.

4. In correcting the working bite, the balancing bite on the opposite side should be watched to be certain there is no interference.

5. Freedom in centric relation should be provided. The teeth must not be allowed to remain locked in centric position.

6. When posterior teeth have deep inclined occlusal planes, a shallower inclination should be established.

The recognition of the important role that occlusal balancing can and should play in the treatment and often in the avoidance of periodontal disturbances is essential to a successful rationale of periodontal care.

Loss of Posterior Occlusion

by OLIVER C. APPEGATE, D.D.Sc.

The Journal of Prosthetic Dentistry, March 1954.

It is an accepted clinical fact that there is a decrease of interarch space following a continued absence of posterior teeth. It is also apparent, but more difficult to demonstrate, that there has been a condyle migration accompanied by alteration in tissue relations of the temporomandibular joint region.

Many who lose posterior occlusal support will not experience serious retrogressive change of the joint tissue, but neither is there any question that some of this number will experience more or less discomfort. A few will have excruciating pain at some time after the occlusal contacts of the posterior teeth are lost. Nor is there any question that complete and immediate relief is usually given these patients when a vertical stop is restored at the proper level. If these clinical facts constitute acceptable evi-

dence, then some condyles do migrate to new positional relations following the loss of posterior occlusion and, conversely, their position also may be improved to give relief from joint disturbances. Two clinical procedures should be instituted for this problem. The first, to replace the missing posterior teeth as soon as possible, recalling that joint damage may come early in some patients. A second clinical objective should be to recover as much of the lost vertical opening in the edentulous area as possible, in this way returning the condyle to more nearly its normal relation to the structures which lie in close proximity.

To evaluate this loss of posterior occlusal relations, the following is to be noted: 1. A loss of posterior teeth may result in a decreased interarch opening of the area with an accompanying disarrangement in the occlusion of remaining teeth. 2. This change in jaw relation centers about a line which extends through the posterior tooth of each side

of the arch. 3. When there is partial recovery of the vertical opening in the posterior edentulous segment, the jaw relation again is shifted around this fulcrum, with the teeth anterior to this line developing premature occlusal contacts. 4. Since this occlusal imbalance cannot occur until the increased vertical opening has been established where teeth are missing, it follows that such premature contacts must be adjusted after the occlusion rim has been worn. 5. To prevent imbalance in all of the replaced teeth equivalent to this new interference, the path record must be worn for another period after adequate occlusal balancing has been accomplished (more than one such adjustment may be needed). 6. These clinical observations would indicate that some change in the temporomandibular joint does accompany the decrease and increase of the interarch opening of a posterior area. In no other way can this premature occlusal relation be explained in areas not showing imbalance before the increased opening was made.

Exposure to X-radiation during the General Practice of Dentistry

by JACK BUDOWSKY, D.D.S., and AUSTIN H. KUTSCHER, D.D.S.

North-West Dentistry, January 1954.

In order to evaluate the amount of exposure to x-radiation to which dental practitioners are subject during the routine course of office practice, the following study was set up with the co-operation of the Ritter Manufacturing Company, Tracerlabs, Inc. (which carried out the laboratory portion of the procedure), and the First District Dental Society of New York State.

At a regularly stated meeting of the

Dental Society, x-ray film badges (with graduated copper step wedge) supplied by Tracerlabs, Inc., were distributed to each of the 125 dentists who volunteered to co-operate in the project. The badge was worn for seven consecutive days of routine normal practice. At the conclusion of each dentist's participation in the study, the badge was returned to Tracerlabs for evaluation of exposure to radiation by a sensitive densitometric determination based on the film blackening produced by roentgen dosage of x-rays.

Of the 125 badges which were distributed, 63 badges were returned within the specified time for evaluation and included in the study. The findings have been summarized in detail in the following table:

RADIATION DOSAGE ON SIXTY-THREE DENTISTS
WEARING A TRACERLAB X-RAY FILM BADGE FOR
ONE WEEK

Tolerance dose (according to the National Bureau of Standard
Recommendation): 300 milliroentgens per week

Milli- roentgens Received	No. of Dentists	Milli- roentgens Received	No. of Dentists	Milli- roentgens Received	No. of Dentists
None.....	5	80	0	160	0
Less than 20.	32	90	6	170	0
20.....	5	100	1	180	2
30.....	3	110	2	190	0
40.....	3	120	1	200	0
50.....	2	130	2	210	0
60.....	4	140	1	220	1
70.....	1	150	0	More than 220	0

Based on the present National Bureau of Standard Recommendations, no dentist received as much radiation as the tolerance dose (300 milliroentgens per week).

However, several reports approached this maximum allowable dosage. A marked lowering of the presently accepted tolerance dose, as might well be anticipated in the near future, would bring some of these individuals into a potentially dangerous zone. Further, it is emphasized that any routine increase in the number of x-ray films exposed by some practitioners (using the same technique) during the course of a week would also proportionately increase the dosage of radiation received, perhaps to dangerous levels. There is obviously no cause for complacency. Rather, in view of the above, it is suggested that the profession should give active consideration to means of decreasing the exposure of the operator to x-radiation.

The Influence of Kutapressin on the Human Bleeding and Clotting Times

by S. C. HARRIS, W. C. NORTH, and A. B. NORTH.

Oral Surgery, Oral Medicine & Oral Pathology, March 1954.

In a recent publication Holtman described his clinical experience when he injected a "vasoconstrictor" substance, Kutapressin, into patients five to ten minutes prior to dental extractions. He reported that bleeding was reduced and clotting hastened in a substantial majority of his 117 extractions. (Digested J.C.D.A., April, 1954.)

Such a report immediately provokes the question: Does Kutapressin have any effect upon bleeding and/or clotting time? Accordingly, an experiment was performed to test this possibility.

Twenty-two young adult male volunteers served as subjects. Bleeding and clotting times were determined on each subject immediately prior to the intramuscular injection of 1 c.c. of Kutapressin. One hour later the observations were repeated. After a twenty-one-day

interval on Subjects 1 to 15 and a fourteen-day interval on Subjects 16 to 22, the entire experiment was repeated. Coagulation determinations were made by the capillary (Pyrex) tube method, on blood from a finger puncture, and bleeding times were measured by the Duke method on a stab of the ear lobe.

Although bleeding time decreased after the administration of Kutapressin in both experiments and the clotting time diminished in the first experiment, statistical examination of the data reveals that there was no significance to the differences seen.

In spite of the variations in such an experiment, which may be attributed to techniques and variations between different subjects and between different days on the same subjects, it still is apparent that there is no influence of Kutapressin upon bleeding and clotting time when tested one hour after intramuscular injection.

It must be concluded, therefore, that the benefits to extraction patients seen by Dr. Holtman are not due to changes in the bleeding or clotting mechanisms.

A.D.A. Principles of Prepayment Plans

From a report presented by Dr. W. PHILIP PHAIR, Secy., Council on Dental Health, A.D.A. to Amer. School Health Assoc.

Public Health Reports, February 1954.

Nine principles were adopted by the American Dental Association in 1953 to assist dental societies in evaluating the desirability, practicability, and soundness of specific plans. In brief, these principles are:

The plan, designed to provide a high quality of dental treatment, should be developed, maintained, and promoted with the advice of authorized representatives of the local or State dental society. Restrictions, dictated by local conditions or lack of facilities, should be determined and regulated by authorized dentists. The dentist who serves the patient must have

complete freedom and responsibility in recommending treatment. He must have the right to accept patients, and provision should be made for direct payment to him, with fees determined by representatives he authorizes. Similarly, the patient must be free to choose his own dentist.

All rules and policies related to the dental aspects of the plan, including examination, diagnosis, treatment, prevention, and professional education, should be determined by officially designated representatives of the dental profession. The plan should designate explicitly both the type and amount of service and the conditions under which it will be provided so that both the patient and the dentist will know exactly the extent of their participation in the program. Sound and efficient business practices should be used in the management of the plan to assure low administrative cost.

The Edentulous Mandible

by LINDEN F. EDWARDS, Ph.D.

The Journal of Prosthetic Dentistry, March 1954.

The most characteristic and well-known feature of the edentulous mandible, from which the permanent teeth have been missing for a period of time, is the absence of a well-defined alveolar process resulting from resorption due to disuse atrophy.

As a result of the resorption of the alveolar process, the vertical height of the bone in the region of the body is greatly diminished; the mylohyoid line, genial tubercles, and incisive fossae with their attached muscles lie near or upon

the crest of the residual ridge, as do the mental foramen and its contained vessels and nerve; some structures, such as the buccal shelf and buccinator crest, lose their identity, while others, such as the chin and lingual tuberosity, seem to be exaggerated.

The coronoid and condyloid processes exhibit certain characteristic features; the former being shorter than the latter and both bent backward; the antero-posterior diameter of the condylar head is diminished; its articular surface is confined to its superior aspect and the lateral tubercle is quite pronounced.

There is evidence to indicate that the rami and body of the edentulous mandible may share with the alveolar process in resorption.

The incidence of supernumerary teeth in the mandibular incisor region is much less than that of the upper incisor region and reported cases are few. Stafne (1932) found that out of 441 patients with supernumerary teeth, 9 had supernumerary lower incisors, 1 case having two additional incisors, and all were incisiform and in alignment with other incisor teeth.

MacPhee (1935) reported 12 cases, out of which 2 cases had an additional lower incisor. Other isolated cases have been reported (Stones, 1951; Fastlicht, 1943; Hendler, 1941; and Oehlers, 1951).

H. E. Wilson, L.D.S., Q.U. (Belf).
The Dental Practitioner, February 1954.

RESEARCH

FOREFRONT OF CANADIAN DENTISTRY

The Distribution of dental caries in children

by R. M. GRAINGER and D. B. W. REID, Chief of Dental Statistics and Research, Division of Medical Statistics, Ontario Department of Health and Connaught Medical Research Laboratories, University of Toronto.

Journal of Dental Research (in press).

The distribution of dental caries among 1,200 children of elementary school age in Peel County, Ontario, was examined statistically. The negative binomial probability distribution was found to describe the distribution of smooth surface caries. The distribution of counts of carious pitted surfaces could not be generally described by any simple probability distribution, although at some ages the binomial distribution could be fitted.

The fit of these distributions to dental

caries scores supports the concept that this phenomenon is a chance process involving some measure of differing individual susceptibility. This may be less important in the case of the pitted surfaces. Using these theoretical probability laws, the average number of affected surfaces per child may be estimated from the observed proportion of children free of decay.

The difference between pitted and smooth surface caries distributions indicates that there is some difference in the etiology of the two classes of lesions. The proportion of pitted surfaces affected is relatively constant at all ages, suggesting that the process of decay on these surfaces depends considerably on the morphology of the teeth at the time of eruption. The smooth surface caries may depend to a greater extent on conditions affecting the tooth after eruption.

Autoradiographic and histochemical studies of the entry and incorporation of sulphur in growing bones and teeth of the rat

by I. F. BELANGER

Abstracts and Communications, XIX International Physiological Congress, Montreal, 1953.

S35 as H_2SO_4 separated isotope was introduced subcutaneously into rats 4 days of age which were then sacrificed at intervals of 1, 2 and 24 hrs. and on alter-

nated days up to 8 days thereafter. Autoradiographs were prepared by the inversion technique from alcohol-formaldehyde fixed tissues and from sections of same, pretreated with formic-citrate at pH 4.9 or incubated with hyaluronidase. The cartilage has shown an intense accumulation of S35 in the proliferating cells at 1-2 hrs. The sulphur is then found in the capsule and cartilage matrix at 24 hrs. and by the end of the second day it is mostly in the areas of hypertrophy and calcification indicating growth movement towards the epiphyseal plate. An overall weak, persistent reaction was recorded

also over cartilage tendons, ligaments and aponeuroses. The initial picture over bone was one of general, rather large intake. After 2 days only a small autoradiographic band at the periosteal junction and a weak reaction over the new spicules were apparent. In teeth, there was also an overall intense reaction over dentine, which has disappeared after 2 days, to make place for a weak band which migrates with time towards the dentino-enamel junction. Over enamel, there was a strong initial linear reaction at the ameloblast border, gaining slowly and

diffusedly towards the inner regions of enamel with time.

After acid demineralization, the autoradiographic picture persisted over cartilage and areas of growth in bone, dentine, and enamel. The overall initial reaction over bone and dentine disappeared with the minerals.

With hyaluronidase incubation, the reaction disappeared rapidly from bone and dentine and slowly from cartilage according to a pattern probably indicative of the original concentration. The picture persisted over enamel after it had disappeared from dentine, bone and cartilage.

Radio-autographic visualization of the formation and fate of the organic matrix of dentin

by RICHARD C. GREULICH and C. P. LEBLOND, Department of Anatomy, McGill University, Montreal, Canada

Accepted for publication in the Journal of Dental Research.

Sodium bicarbonate labelled with C^{14} was administered to newborn and three-day-old albino rats, whereupon these animals were sacrificed at intervals of from four hours to 15 days after injection. Radio-autographs of their teeth were prepared after decalcification.

The radio-carbon of bicarbonate is incorporated into the organic matrix of the dentinal organ. At the earliest time intervals studied, the labelled matrix lies in the predentinal area, but at later intervals, the reactive zone is farther and farther away from the odontoblasts as new, non-labelled predentinal matrix is laid down. In the process, the labelled matrix becomes dentin.

Counts of the individual silver grains constituting the radio-autographic image of the matrix show no decrease in its intensity during the 15-day period studied. Thus, the labelled matrix, and, by inference, the whole matrix of dentin is a very stable structure (in contrast to C^{14} -labelled structures formed in other organs).

The formation of dentin may be considered to occur in three steps: (1) The formation of a matrix framework—presumably a collagen—which first appears as predentin at the apices of the odontoblasts. (This collagenous material would be the substance which is traced by means of C^{14}); (2) the addition of carbohydrate material to the framework of the matrix—changing it from predentin to dentin; and (3) the appearance of calcium phosphate crystals in the matrix of dentin.

Since the carbohydrate material and crystals are acquired simultaneously at the predentino-dentinal junction, it is here suggested that the crystals may be bound to the collagen matrix of dentin by means of the carbohydrate material.

There is evidence to suggest the possibility that teeth may be stained by chlorophyll-containing medications when such compounds are permitted to remain in close contact with the tooth over a prolonged period. This is of especial interest to orthodontists, where appliances are likely to inadvertently trap medications, thereby permitting undesirably prolonged contact of medicament and tooth.

Austin H. Kutscher, D.D.S. and David A. Dragiff, D.D.S.
Oral Surgery, Oral Medicine & Oral Pathology, March 1954.



Aerial View, Algonquin Hotel, including Swimming Beach at Katy's Cove.

An aerial view of the Algonquin Hotel, Saint Andrews-by-the-Sea. This shows the swimming beach at Katy's Cove in the foreground where warmed salt water in a natural bay makes swimming and sun bathing on the beach a pleasure.

**JOINT MEETING
THE CANADIAN DENTAL ASSOCIATION
NEW BRUNSWICK DENTAL SOCIETY
SEPTEMBER 5, 6, 7, 8, 1954**

PLAN NOW TO ATTEND

Cheques or money-orders for registration fee of \$15.00 should be made payable to the New Brunswick Dental Society and mailed to Dr. S. K. Wetmore, Joint Convention Committee Secretary, 147 Germain Street, Saint John, N.B. together with applications for hotel reservations.

DOWN TO THE SHORE IN FIFTY-FOUR

PROGRAMME OUTLINED

SUNDAY:

Algonquin Hotel Registration
Musical

MONDAY:

Algonquin Hotel Registration
Table Clinics
Exhibits
Luncheon
Essay
Clinics
C.D.A. . . . Dinner and Annual Meeting
Chuck Wagon Dance

TUESDAY:

Algonquin Hotel Registration
Clinics
Exhibits
Luncheon
Essays
Clinics
President's Dinner and Dance

WEDNESDAY:

Algonquin Hotel Exhibits
Clinics
Essays
Luncheon — Presentation of Golf Prizes
Clinics

LADIES' PROGRAMME

MONDAY:

Sherry Party
Golf Tournament
Afternoon Tea
Chuck Wagon Dance

TUESDAY:

Coffee Party at Katy's Cove
Bridge and Afternoon Tea
President's Dinner and Dance

WEDNESDAY:

Terrace Coffee Party
Luncheon Presentation of Golf Prizes

**TENNIS, GOLF, SWIMMING and SHUFFLE BOARD
AVAILABLE AT ALL TIMES**

EDITORIAL

St. Andrews-By-The-Sea, September 5-8, 1954

Preparations for the joint meeting of the Canadian Dental Association and the New Brunswick Dental Society in September are virtually completed. The vacationland setting of the beautiful Algonquin Hotel, St. Andrews-By-The-Sea, will provide an atmosphere of pleasant relaxation which is so important for the complete enjoyment of any convention. No meeting should be all work. As Dr. William J. Mayo once remarked "there is a limit to the amount of learning a man can absorb". So it is with convention programmes; there must be a balance between the educational and recreational aspects of the meeting.

As in former years, the Convention Committee commences preliminary work months before the date of the annual convention which precedes the one for which the committee is responsible. It is often a matter of some surprise to practitioners not acquainted with the intricacies of developing a convention programme that this organization is started so far in advance of the meeting date. It may be of some interest to know that there have, at this date, already been four meetings of the committee responsible for the 1955 Convention.

The New Brunswick Dental Society has been most conscientious in assuming its many responsibilities. The General Chairman, the members of the General Committee, and the Chairman and members of the various working committees have prepared assiduously to present a programme in keeping with the attained standards of the Canadian dental profession. Essayists, group clinicians, and table clinicians have been selected with a view to providing material of interest and helpfulness to the practising dentist.

The Committee has arranged as well for a full complement of social functions. Luncheons, dinners, dances, a golf tournament, and a musicale will provide adequate means for satisfactory diversion. The Ladies' Committee, too, has made provision for an enjoyable programme for the wives of the conventioners.

This convention, being held as it is in the heart of one of Canada's foremost vacation-time locales, will undoubtedly be an event which is eagerly anticipated and fondly recollected.

A Survey of Dental Practice

A few weeks ago each member of the Canadian Dental Association received a questionnaire entitled "A Survey of Dental Practice". The questionnaire was submitted in two parts; one for those in practice, either full or part time, and part two for those in full time salaried positions. The questionnaire covered virtually all aspects of the physical practice of dentistry. Such questions as the size of the municipality, the number of weeks practised, the average time spent at the chair, the number of appointments during a year, the number of patients, the average length of appointments, the type of practice engaged in, the ancillary personnel employed, and certain questions relating to the financial aspect of the practice, were all asked.

Each dentist was absolutely assured of the complete anonymity of his reply. Each dentist, too, was encouraged to submit a reply because of the absolutely essential nature

of the data for use by the Association in dealing with other authorities and interested groups. That the Association should have this accurate information is vital to each practising dentist in Canada.

It is a sad commentary that even as of this date less than half the practising dentists in Canada considered the questionnaire of sufficient concern to make reply.

At the risk of being repetitive, may we urge each member to discharge this obligation to his Association and, incidentally, to himself, by returning his reply before June 1st, 1954.

Book Reviews

The Human Masticatory Apparatus by Meyer Klatsky and Robert L. Fisher. Published by Dental Items of Interest Pub. Co. Inc. Brooklyn, N.Y. Pages 246. Price: \$6.60

The subject of anthropology permits the coverage of a wide range of subjects. This reviewer feels, however, that the authors have overstepped themselves. The result is a 246 hodgepodge which covers histology, anatomy, dental caries, periodontology and physiology—a complete dental course in one short volume. One can disagree with much of the contents.

The anterior fibres of the temporal muscles do not retract the mandible as stated on page 71. In discussing the etiology of caries only the acid theory is emphasized, yet Miller, whom they quote, clearly indicated the importance of the protein elements. Prevention of caries is discussed at length yet the controversial subject of fluoridation is not even mentioned.

The authors, however, do project the theory that caries diminish where the function is greater. This caused one dentist to remark that it would therefore be a good practice for caries-prevention to eat candies in the form of kisses, caramels, and "jawbreakers" in order to prevent caries.

To prove the relationship between function and caries an interesting study was made by one of the authors. It was found that masticatory pressure is inversely proportionate to the number of fillings or cavities present. From this the conclusion is drawn that "The incidence of dental caries is inversely proportional to the amount of force exerted by the individual." It could be concluded however, that the ever-protective neuromuscular system will not permit great pressure on teeth with fillings and cavities.

A great deal of space is used to indicate that Box is wrong in assuming that wear is caused by the abrasive elements of food. Instead, they believe that "the functional stresses and strains which are brought to bear on the teeth during the dynamic process of mastication are the cause." In the first place, they misinterpret Box's reason for introducing the subject of wear altogether and do not appear to follow the idea that the direction of force is properly and physiologically produced by wear, causing certain benefits. Box does not advocate excessive wear, which the authors imply. Besides, this reviewer has pointed out from some of his own studies that the Macfarlane grizzly bear has wear on his teeth due to the sand particles present on the wild parsnips which he digs out of the loose sand. Other grizzly bears do not have the same diet and do not manifest the same degree of wear.

Despite all this the book makes interesting reading, particularly, when it deals with comparative anthropologic studies. It could be added to the average dental library.

C. H. MOSES

Internal Medicine in Dental Practice by Bernard I. Comroe, Leon H. Collins Jr., and Martin P. Crane. Published by The Macmillan Company of Canada Ltd. Pages 563. Price: \$7.50.

The fourth edition (1954) of this text brings the subject of Internal Medicine in Dentistry up to date. However, there is insufficient change, between the third (1949) and fourth editions, to warrant obtaining a copy of the latter, also.

Similar to the previous edition this presents each subject clearly and concisely. It gives the reader a reasonable picture, wherever possible, of the inter-relation of the disease between the

oral cavity particularly and the body generally.

The same number of topics are discussed and in a way that renders the information easily available.

Some discussions are necessarily very brief i.e.; Allergy and Nutrition. This is understandable as these, and other, subjects merit entire texts in themselves.

The chapter on Foci of Infection is well presented and gives a resumé of the present status of the problem.

The sulfonamides are well discussed and brief mention is made of the antibiotics.

The many boxed inserts are an aid in quick reference for differential diagnosis etc.

This text neatly complements Burket's two main texts and vice-versa. It should prove a most useful addition to the library of any practitioner of Dentistry.

R. L. SCHARFF

The following texts were received in this office for review. Problems in translation make it difficult to assess adequately their contents. However, they are listed for any one able to utilize them.

Leitfaden der zahnärztlichen Chirurgie.

Einführung in die klinische Zahnheilkunde für Studierende der Medizin und der Zahnheilkunde in 16 Vorlesungen. Von Prof. D. G.

Axhausen, Berlin. 243 Seiten mit 227 teils farbigen Abbildungen. Format 17 x 24,5 cm. 1950. Kartoniert 18.—DM.

Konservierende Zahnheilkunde.

Dr. H. H. Rebel, Tübingen, 3., erweiterte und verbesserte Auflage. 584 Seiten mit 218 Abbildungen. Format 17 x 24,5 cm. 1950. Kartoniert 34.—DM, Leinen 37.—DM.

Genese und Prophylaxe der Karies.

Vorträge der wissenschaftlichen Tagung der Deutschen Gesellschaft für Zahn-, Mund-, und Kieferheilkunde vom 28. bis 31. Juli 1949 in Wiesbaden. 1. Teil. 150 Seiten mit 117 Abbildungen. Format 17 x 24,5 cm. (Zahn-, Mund-, und Kieferheilkunde in Vorträgen, Heft 4). 1950. Kartoniert 16.80 DM.

Paradentitis und Paradentose.

Leitfaden der Zahn-betterkrankungen. Von Prof. Dr. E. Harndt, Berlin. 186 Seiten mit 291 Abb. Format 17 x 24,5 cm. 1950. Kartoniert 17.80 DM.

Jugendzahnpflege.

Vorträge der Tagung der Medizinisch-wissenschaftlichen Gesellschaft für Zahn-, und Kieferheilkunde am 2. und 3. April 1949 in Halle. 88 Seiten mit 109 Abbildungen. Format 17 x 24,5 cm. (Zahn-, Mund- und Kieferheilkunde in Vorträgen, Heft 2). 1950. Kartoniert 12.—DM.

The above texts are published by Carl Hanser, Verlag-München, Leonhard-Eck Str. 7. München 27, Germany. W.J.D.

The Library

Additions

ASCHER, F. Prognathie; ihre kieferorthopädische, chirurgische und prothetische Behandlung. 1951. 45p. illus.

BURLINGHAM, R. The odyssey of Modern Drug Research. 1951. 124p. illus.

COEHLO, D. H. A complete fixed bridge procedure. 1949. 129p. illus.

FLOREY, M. E. Clinical application of antibiotics, (Penicillin). 1952. 730p. illus.

GOLDMAN, H. M. Periodontia, 3rd ed. 1953. 790p. illus.

GOLDMAN, L. B. Fundamentals of clinical cancer with emphasis on early diagnosis and treatment. 1953. 312p. illus.

HARDY, H. D., WOLFF, H. G. and GOOD-ELL, H. Pain sensations and reactions. 1952. 435p. illus.

HEPPLE, G. H. X-rays in dental practice. 1952. 120p. illus.

LANGTON, C. V. and ANDERSON, C. L. Health principles and practice. 1953. 417p. illus.

LAZAREVITCH, I. La médecine en U.R.S.S. 1953. 217p.

LENDLE, L., und WEIGMANN, R. Pharmakologie. 1953. 160p. illus.

MUHLER, J. C., HINE, M. K. and DAY, H. G. Preventive dentistry, 1954. 336p. illus.

SAKLAD, M. Inhalation therapy and resuscitation. 1953. 343p. illus.

SWENSON, M. G. Complete dentures, 3rd ed. 1953. 735p. illus.

WEITZENHOFFER, A. M. Hypnotism; an objective study in suggestibility, 1953. 380p.

The Association

Annual Meeting 1954 St. Andrews-by-the-Sea New Brunswick

Board of Governors Meets Sept. 1 to 4, 1954
Convention Sept. 5 to 8, 1954

Details respecting the programme and information regarding transportation and reservations will be distributed to the membership shortly. In the meantime, information may be secured by writing: Dr. A. D. Bona, Chairman of Housing Committee, 82 King St., St. John, N.B.

Reduced Railway Fares

The Canadian Passenger Association has granted reduced fares for persons attending the Annual Meeting at St. Andrews-by-the-Sea. The reduced fares apply to dependent members of C.D.A. members' families.

The authorized dates for the start of the going journey will be as follows:

From stations on Western Lines—all points west of Fort William and Armstrong, Ont.—August 26 to September 3, inclusive, 1954.

From stations on Eastern Lines—Fort William and Armstrong, Ont., and all points east thereof, except Newfoundland—August 28 to September 5, inclusive, 1954.

From stations in Newfoundland—August 26 to September 3, inclusive, 1954.

In order to secure reduced fares it is necessary to present an Identification Certificate when purchasing tickets. Identification Certificates for this purpose may be obtained by writing The Secretary, Canadian Dental Association, 234 St. George St., Toronto, Ontario.

Economic Survey

Have you completed and returned your questionnaire?—A high percentage return is most desirable in order to assure acceptability of the figures when tabulated. The requested data is essential in furthering the work of the Association and in the interests of the profession. Your prompt cooperation is requested in this effort.

Significant Resolution re Fluoridation

The following resolution as passed on 9 December '53 by the El Paso County Medical Society has been received.

"RESOLUTION ON THE EFFECTS OF FLUORINE IN MUNICIPAL DRINKING WATER"

WHEREAS, there is substantial evidence that the water supply of Colorado Springs has con-

tained a surplus amount (2.6 parts per million) of fluoride for a period of about 75 years;

BE IT RESOLVED that during the long practice of medicine in Colorado Springs, it is the considered opinion of the members of El Paso County Medical Society that we have not experienced any clinical symptoms which can be attributed to the use of such water. It is known, however, that a condition known as "mottled enamel" can be produced by the use of water containing an excess of fluoride.

BE IT FURTHER RESOLVED that this resolution be made a part of our permanent record and be put at the disposal of the dental profession."

(The accompanying letter states that the fluoride content of the water in the area varies from 2.6 to 8 p.p.m. and that the Society has a membership of 130.)

Toronto School Receives One Million

The following paragraph is contained in the Budget Statement as presented by the Honourable Leslie M. Frost, Treasurer of the Province of Ontario, to the Legislative Assembly on Thursday, March 11, 1954.

"A special capital grant of \$1.0 million will be paid to the University of Toronto to provide for an expansion of the College of Dentistry. Honourable Members will realize that there is a close relationship between dental and medical health. In Canada there are only five dental colleges, the largest of which is in Ontario. But with Ontario's population growth alone, expansion is necessary; with the demands from the other provinces, the need is immensely magnified. A substantial increase in the dental teaching facilities of Ontario is desirable not only from the standpoint of this Province but from that of Canada; and because of the nationwide benefits which will result from our expanded dental teaching programme and the recognition that good dentistry makes for better health, it is hoped that the Government of Canada will join with Ontario in making a substantial contribution to the cost of this undertaking."

F.D.I. Meeting at the Hague June 8-13

Members of the Canadian Dental Association are invited to attend the 42nd Annual Meeting of the Federation Dentaire Internationale. The meeting is being held in conjunction with a Jubilee Congress sponsored by the Dutch dental profession. The meeting will actually be held at Scheveningen, a seaside resort near The Hague. During the six-day meeting a scientific programme will include papers on the prevention of caries, periodontal disease and orthodontic disorders. An extensive social programme has been arranged. Requests for hotel accommodation and other information should be addressed to Dr. G. Arnold, Jubilee Congress Office, Adriaan Geekooplaan, The Hague, Netherlands.

A dinner was given by the members of the profession in Great Britain to Sir Wilfred and Lady Fish at the Grosvenor House, London, on April 2, 1954. Knighthood was conferred on Dr. Fish in the New Year's Honours List. He has served as Chairman of the Dental Board of the United Kingdom for the last ten years.

The Thomas P. Hinman Medallion was conferred upon Dr. J. H. Johnson, Faculty of Dentistry, University of Toronto, at the

Thomas P. Hinman Mid-winter Dental Clinic at Atlanta, Georgia, in March, 1954. Dr. Johnson presented a paper at the meeting. The medallion is presented for outstanding services in the field of dentistry.

At the recent Federal by-election, Dr. Rodolfe Leduc, Maniwaki, Quebec, was elected for the Gatineau constituency. Five dental graduates are now members of the House of Commons.

STATISTICAL DATA — DENTAL PERSONNEL

TABLE I

STATISTICAL DATA RE DENTAL PERSONNEL IN CANADA

(As reported by Provincial Registrars) As of January 1954

Province	No. of Dentists Reported			During year of 1953			Total Increase or Decrease 1938*	Ratio Total No. of Dentists per Capita Population
	Male	Female	Totals	Deaths	Retirements	Additions		
Newfoundland.....	30	2	32	0	0	8	+14	1/11969
P.E.I.....	34	0	34	0	0	1	+4	1/3118
N.S.....	195	3	198	7	3	11	+29	1/3348
N.B.....	116	0	116	2	0	5	+6	1/4621
Quebec.....	1269	4	1273	22	10	63	+399	1/3353
Ontario.....	2194	26	2220	17	11	75	+288	1/2206
Manitoba.....	261	1	262	0	2	9	+11	1/3088
Saskatchewan.....	213	2	215	0	1	10	+5	1/4005
Alberta.....	366	5	371	0	2	23	+135	1/2701
B.C.....	572	5	577	8	3	32	+215	1/2132
Totals.....	5250	48	5298	56	32	237	+1086	1/2790

Population figures used in this table are those as estimated by the Federal Bureau of Statistics as of June, 1953.

*Figures for increase or decrease as compared to the year 1938 are given for comparative purposes.

TABLE II

MOVEMENT OF CANADIAN DENTISTS DURING 1953

To:	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	U.S.A.	Great Britain
From:													
Nfld.....	0	0	0	0	0	1	0	0	0	0	0	0	0
P.E.I.....	0	0	0	0	0	0	0	0	0	0	0	0	0
N.S.....	0	0	0	0	0	0	0	0	0	0	0	0	0
N.B.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Quebec.....	0	0	0	0	0	3	0	0	0	0	0	0	0
Ont.....	1	0	0	1	0	0	2	0	2	4	0	1	2
Man.....	0	0	0	0	0	0	0	0	1	0	0	0	0
Sask.....	0	0	0	0	0	0	1	0	1	3	0	0	0
Alta.....	0	0	1	0	0	1	0	1	0	2	1	0	0
B.C.....	0	0	0	0	0	0	0	0	1	0	0	1	0

TABLE III
NUMBER PRACTISING SPECIALTIES, BY PROVINCE
 (Only those practising the specialty designated full-time enumerated)

	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Totals
Dental Oral Surgeons (Exodontists).....	0	0	1	0	3	27	4	0	3	6	44
Orthodontists.....	0	0	1	0	14	36	4	1	4	6	66
Periodontists.....	0	0	0	0	2	15	1	0	1	2	21
Pedodontists.....	0	0	0	0	2	4	2	0	0	4	12
Totals.....	0	0	2	0	21	82	11	1	8	18	143

TABLE IV
NUMBER EMPLOYED IN HEALTH SERVICES BY PROVINCE
 As of January 1954

	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Totals
Dental Schools: (Teaching Staff)											
Full-time.....	0	0	2	0	9	11	0	0	2	0	24
Half-time.....	0	0	0	0	15	6	0	0	18	0	39
Hospital Service											
Full-time.....	0	0	3	2	0	29	0	3	4	6	47
Half-time.....	0	0	0	1	0	4	0	0	0	3	8
School Dental Service:											
Full-time.....	0	0	1	0	14	17	2	1	3	20	58
Half-time.....	0	0	3	3	6	57	2	1	3	2	77
Public Health Service:											
Full-time.....	0	3	3	1	1	14	7	7	0	9	45
Half-time.....	0	0	0	0	6	0	0	0	0	0	6

TABLE V
TOTAL NUMBER EMPLOYED BY FEDERAL DEPARTMENTS
 As of January 1954

Department of Veterans Affairs.....	40
Department of National Defence.....	153
Department of National Health and Welfare.....	10
Totals.....	203

Comment on Statistical Data for 1954

Since the establishment of the Annual Survey of Dental Personnel (See above tables) the year 1938 has been used as a base year for comparative purposes. Comparison of the increase of personnel by provinces indicates considerable disparity.

This position is best shown by a comparison of ratio of dentist to population for 1938, and the present year as given below. Newfoundland is omitted as the ratio figures are not available for 1938. At best, four provinces maintained or slightly improved the ratio while in five provinces the

ratio has worsened. Distinct relationship between the provinces with greatest increase in population during the period and corresponding increase in dental personnel does not appear to exist. For example, the percentage increase of population between the year 1938 and 1953 is, for practical purposes relatively the same for Ontario and Quebec, while in British Columbia the percentage increase is much higher than either Ontario or Quebec. When we examine the ratio change of dentist to population for this period we find that Quebec improved its ratio, Ontario lost considerably and British Columbia, in spite of the greatest

increase in population of any province, almost held the same ratio.

	Ratio for 1938	Ratio for 1953
P.E.I.	1/3133	1/3118
N.S.	1/3242	1/3348
N.B.	1/4045	1/4621
Que.	1/3629	1/3353
Ont.	1/1962	1/2206
Man.	1/2668	1/3088
Sask.	1/4481	1/4005
Alta.	1/3317	1/2701
B.C.	1/2102	1/2132

A false view of the situation is presented if only the base figures are taken into con-

sideration. The change in economic conditions and the existing increase in appreciation of dental services among the public are great factors not represented in the statistical tables.

The actual increase over 1953 of practising dentists in Canada is 83. As reported earlier in the Students Register 1954 considerably fewer graduates can be anticipated during 1954. If the loss by death and retirement is sustained, an even smaller increase in the number of dentists can be anticipated for 1955. With a rapidly increasing population this constitutes a serious situation, any sizable increase in dental personnel depends upon the establishment of increased facilities for the training of dentists.

Committees and Councils

Nomenclature

The work of the Committee on Nomenclature for this year will constitute, in effect, only a pilot study of the problem of dental nomenclature. As past reports of committee activities are unavailable, it was felt that only a basic consideration of the problem of dental - nomenclature should be rendered at this time. The committee has set itself the responsibility of suggesting a suitable source of reference for meanings and spellings of common words, a policy for the selection of dental terms in respect to word derivations, and a standardized terminology for the various specialties or branches of dentistry.

Much of this work has already been done, and a full report of the committee's activities will be submitted to the Board of Governors of the Canadian Dental Association for adoption as official Canadian Dental Association policy if the Board so directs.

Dr. George Denton of the American Dental Association pointed out recently six reasons for a pronounced lack of suc-

cess of any committee undertaking the task of directing dental nomenclature. First of all there is an inherent difficulty in the problem because of the wide diversification of dental terms throughout the world, with the accompanying contributions to dental literature from the various geographic centres. Also there has been a lack of workers in this field as well as a lack of continuity of personnel. Then there is the problem of geographic separation and a marked evidence of little moral and financial support from the profession itself.

For the present the Nomenclature Committee of the Canadian Dental Association intends to maintain a watching brief of dental nomenclature, and, upon request, to give assistance and guidance to the dental schools and the dental journals in Canada when problems of terminology exist. It is the committee's sincere hope that if and when its suggestions form part of the official policy of the Association, that the cooperation of those contributing to dental literature will be forthcoming.

Wesley J. Dunn,
Chairman.

Economic Security

More Pitfalls of Health and Accident Insurance

By E. L. R. WILLIAMSON, M.B.E., B.P.A., F.R.E.S.,

*Consulting Economist, Administrator of the
C.D.A. Pension-Assurance Plan.*

Preliminary figures of the Comprehensive Canadian Sickness Survey now in process of compilation indicate that of the 5,298 Members of the Canadian Dental Association approximately 1,100 will suffer some illness or accident requiring treatment in any one year, and that the average expenditure of each will be \$163.80, without consideration of loss of income.

Further Canadian statistics are not yet available, but application of American figures indicates that of these 1,100 Members, 123 will be disabled for a period of three months or longer. From a statistical standpoint, therefore, every Member of the Dental Profession will suffer some form of disability within a period of four years and nine months, and one man in every nine will be disabled for three months or longer during that period. It should be noted that experience under the C.D.A. Plan—despite initial selection and the short time in which it has been in operation—tends to confirm these statistics.

Having noted the extent of the problem to be faced, the effect of Limitations of Benefit in a Sickness and Accident contract becomes a matter of prime importance, assuming that the policyholder has surmounted the barriers to Access to Benefit dealt with in the previous article.

Sickness overwhelmingly is the major problem: All statistics agree upon this. The best available figure at the present time indicates the ratio of sickness to accident is 16.2 to 1. Nearly all contracts provide for substantially reduced benefits in the case of disability occasioned through sickness. The restrictions take

the form of a reduced period for payment of benefit, and often a reduction in the amount as well.

The restriction concerning maximum period of payment for disability due to sickness usually is, in addition, cumulative. The total of all recurrences of disability attributable to the same cause reaches the maximum and no further coverage is available, even if the underwriter does not cancel the contract or renew it with an exclusion.

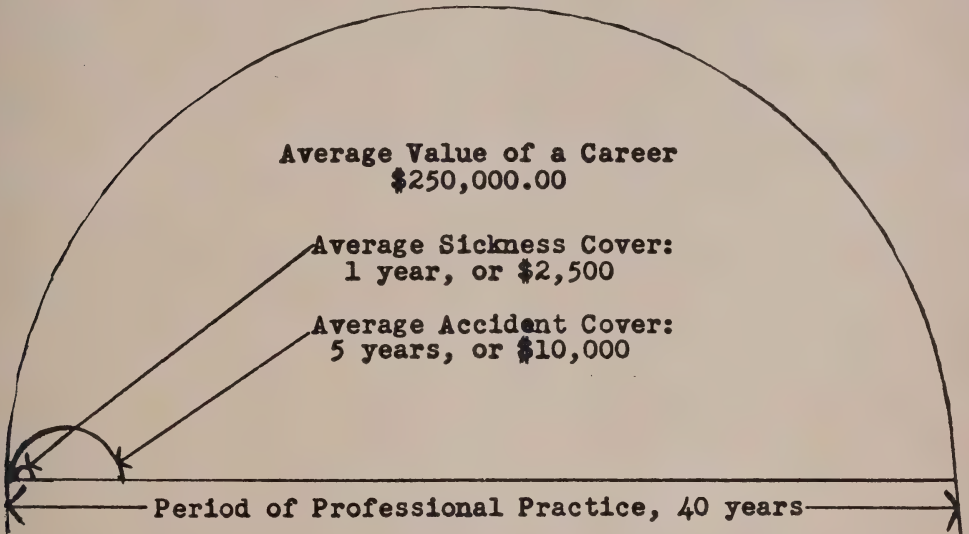
A major complication, however, arises from the fact that sickness amongst the dental profession is indicated by surveys of the Mayo Clinic and the Newark Clinic as being predominantly of "stress" or "tension" origin: Gastro-intestinal (including ulcers), Cardiac (including hypertension), Arthritis and Rheumatism, Nervous exhaustion, and Dermatitis. (Reported in Journal of the American Dental Association). Such diseases frequently involve prolonged or even permanent disability, but confinement to hospital or home is not required; indeed could be inimical to recovery, or at least to long survival. In such circumstances, nonetheless, the standard provision of health and accident contracts is to exclude all benefit or to reduce the maximum period of payment to two or three months.

To turn to disability arising from accident—which is the cover stressed in advertising—it should be noted that more than 90% of all prolonged disability from accident is occasioned by dismemberment or blinding. In such cases, the monthly indemnity usually is not paid, but a single lump sum which is the equivalent of a few months' professional income is paid in lieu. In addition, the contract is terminated by payment of such "principal" or "capital" sum. Notwithstanding the fact that the dentist remains disabled for the rest of his life, and with an unimpaired life expectancy.

To sum up: The great majority of sickness and accident indemnity contracts severely limits the amount and duration

of benefit in the circumstances most likely to interfere with the dentist's ability to continue professional practice, and the in-

cidence of such need is relatively high. Graphically, the problem may be presented:



The only form of Health and Accident cover meeting the needs of the dental practitioner is *one which will provide cover throughout the entire period of potential professional practice, and can in no circumstances be reduced to either a lump sum or abrogated at the end of a*

relatively short period of time.

A number of questions have been asked concerning disability indemnity provided as an addition to a life assurance contract. This will be dealt with in the next article.

The Corps

Dr. S. A. Moore, F.I.C.D., Honorary Lieutenant-Colonel of the Royal Canadian Dental Corps, has presented the Corps with 19 bound volumes of the Journal of the Canadian Dental Association, and a volume of Burke's Peerage.

The bound volumes are beautifully done in maroon leather and gold lettering. These, with Burke's Peerage will form a valuable addition to the library of the R.C.D.C. School.

Promotion of Capt. J. E. Hughson to the rank of Major has been announced.

Major Hughson was born in Galt, Ont., served in the R.C.N. during the Second World War and retired in 1945 with the rank of Sub-Lieutenant.

In 1949, he graduated from the University of Toronto and was appointed to the Royal Canadian Dental Corps, serving in Europe and latterly in Calgary.

He is married and has one daughter.

The Provinces

Saskatchewan

The Executive of the **Saskatchewan Dental Association** has just completed negotiations with Dr. Wm. E. Koch, Jr., of St. Louis, Missouri, for a series of clinics to be held in various centres in the province during the first part of June. The subject of the clinic will be "Radiographic Interpretation".

Dr. Koch has been on the staff of Washington University School of Dentistry in St. Louis since 1934 in the Department of Radiology working under Dr. Clarence O. Simpson, well-known radiodontist, and on Dr. Simpson's retirement was made head of this department.

Dr. Koch has been and still is a much sought after clinician and we are looking forward to his visit with us in June.

The members of the S.D.A. will be advised of Dr. Koch's itinerary when it has been completed and it is hoped that all members will take advantage of his visit.

L. D. H.

Manitoba

The **Manitoba Dental Association** met as usual in January for the annual business meeting, election of Board members, recapitulation of the Association's affairs of the previous twelve months and the selection of officers of the Board of Directors for the current year. Dr. C. S. Robertson of Dauphin is now president, Dr. J. B. Rumberg vice-president, Dr. W. J. Riley past president, Dr. J. Gordon Elsey who had completed a six-year term with the Board was replaced by Dr. James Passalis. These gentlemen along with Dr. J. M. Grahame, who is completing his six-year term, are all of Winnipeg. Dr. J. M. Williams of Hamiota completes the roster of six members of the Board for 1954.

Dr. J. F. Morrison, who has been secretary of the Board for 31 years, retired from private practice last October and is now full-time Secretary, Registrar and Treasurer of the Association. The address is the same, 416 Medical Arts Building.

The Directors have been trying for three years to have the Dental Act amended so that every piece of prosthetic dentistry sent to a dental laboratory for processing must be accompanied by a prescription signed by a licensed dentist performing the treatment. This means that any prosthetic work in a dental laboratory which is not covered by a bonafide prescription is evidence of illegal

practice of dentistry. This would greatly facilitate the successful prosecution of technicians illegally practising prosthetic dentistry.

In 1952 and 1953 the attempt to get the amendment, known as the prescription legislation, before the Legislature was not successful. In 1954 the legislation was introduced into the Legislature and got as far as second reading where it was defeated by the closest vote in years, 27-24.

J. F. M.

Quebec

Mayor Wilfred Hamel and City Health Director Dr. Berchmans Paquet have endorsed a Quebec Dental Society project to fluoridate Quebec's drinking water and establish free dental clinics.

A lengthy brief, detailing the project, was tabled before the first magistrate by a delegation of the dental society supported by governors of the College of Dental Surgeons of the Province of Quebec.

Dr. Gustave Lachance, president, headed the delegation of the Quebec Dental Society with Dr. Ratté speaking for the governors of the College of Dental Surgeons of the Province of Quebec.

At a recent by-election, **Dr. Rodolphe Leduc**, a Quebec dentist, was elected Liberal member for the riding of Gatineau, P.Q.

The **Annual Winter Meet of the Montreal Dental Club** changed location this year to the popular Chantecler Lodge. A good representation boarded the train in Montreal and arrived in the Northland to enjoy this gay holiday mood by partaking of the many winter sports that were available.

One of the more popular sports that caught the fancy of the non-skiers was the roaring game, alias curling. The Chantecler boasts one of the newest and loveliest clubs in the Province. To those who fancied themselves proficient on the hickories, snow conditions were ideal. All in all the Meet was very successful and all those who attended look forward to next year's Winter Outing.

This February meeting was held at the Queen's Hotel, on Monday, Feb. 15th. The main speaker of the evening was Dr. Johnston W. Abraham and his topic was "Dental Fees and Practice Administration." It proved to be a very excellent talk and one that should not have been missed by any practising dentist.

Some of the highlights of his address were as follows: "Avoid bad business habits when starting in your practice as they will

continue when you become very busy and consequently will become increasingly more difficult to rectify.

"In determining fees you must determine your overhead—do not guess. Keep an accurate record of your productive time. Be sure and establish a minimum fee.

"If the average dentist can work 250 days out of the year and produce six hours out of each day, he will be doing well." The speaker was thanked by Dr. Donald Henry.

The **March Meeting** was held in the form of a dinner meeting. We were privileged to hear three of our own members give a review on three of the clinics held last fall.

Dr. Duncan Kennedy gave a review of Dr. MacIntyre's lecture on Preventive Orthodontia.

Dr. A. F. Cameron reviewed Dr. Victor Steffle's clinic on removable Partial Dentures.

Dr. R. P. W. Ryan concluded the evening with his review of Dr. H. M. Cline's talk on Gold Foil.

The speakers were thanked by Dr. Austin Oliver. P. A. L.

Specialists, General Practitioners and Neophytes alike were treated to one of the most interesting evenings of the year at the March meeting of **The Montreal Endodontia Society**. The meeting took the form of a Question and Answer session, the president, Dr. Geo. Zimmerman acting as moderator whilst the "Quiz Experts" were Drs. M. B. Archambault, W. Johnston and H. H. Pearson. Prior to the question period, at the request of the moderator, the Panel outlined the standard accepted technique in Endodontia (one of the few times the experts agreed 100%):—

1. Proper and essential equipment.
2. Proper x-rays.
3. Tooth operable.
4. Proper sterilization.
5. Mechanical Debridgement.
6. Sterilization of canal and apical region.
7. Hermetically sealing of canal.

Question:—When, if ever, is an acutely involved tooth "left open?"

Answer:—The panel divided itself unevenly into two sides. The side in favour of never leaving a canal open recommended complete aspirating the canal every day for several days with the use of sedatives and counter irritations as necessary. It might occasionally be necessary to aspirate more than once a day for the first day or so. Drugs are worthless if placed in the canal at this stage, due to the presence of excessive fluid.

The other side recommended leaving the canal open under the following circum-

stances.—1. When in doubt. 2. when the patient's resistance is low. 3. where there is sharp shooting pain either before or during treatment. 4. where the x-ray shows a large apical area but no fluid drains. 5. when the x-ray is basically negative.

Question:—How can gutta percha be removed from a canal?

Answer:—By the use of a rotary motion with a reamer (NOT a file) soaked in chloroform or eucalyptol.

Question:—When does one recommend the use of antibiotics systemically?

- Answer:—1. Low patient resistance.
2. Presence of temperature, malaise, cellulitis.
3. Penicillin first choice; aureomycin second.

Question:—When is a tooth ready for filling?

Answer:—Upon obtaining two successive negative cultures.

Question:—When should a tooth under treatment be given up as a failure and be sacrificed?

Answer:—Inability to completely clean and sterilize canal(s) associated with patients' interest, mental approach and financial considerations.

Question:—What causes continued pain during treatment?

Answer:—1. Trauma. 2. Files or drugs beyond apex. 3. Prolonged use of the same drug. 4. Presence of lateral canals.

Question:—What should be done when poorly treated teeth showing apical involvement (not including large cysts), and exhibiting no clinical signs or symptoms, are discovered accidentally during x-ray examinations?

Answer:—One-third of the panel recommended immediate treatment, or if impossible, extraction. Two-thirds of the panel frequently recommended letting sleeping dogs lie in the absence of all clinical signs and symptoms.

Question:—Does continuous weeping of a canal despite two negative cultures prohibit the filling of the tooth?

Answer:—No. The cause is frequently the placing of files, paper points or drugs beyond the apex.

Question:—How can deciduous teeth with apical involvement (non-vital) be treated—short of extraction?

Answer:—The panel was strangely silent!
R.F.H.

Newfoundland

The Annual meeting of the **Newfoundland Dental Association** was held in the

Staff House at Grand Falls during February 11th to 13th.

Dr. F. A. Janes, President of the Association, was in the chair for the meetings, and Dr. R. W. Ball of Grand Falls took care of all the arrangements for this Annual Meeting.

Dr. James reported an active year with fourteen meetings. During the year a new constitution was adopted by the Association.

Dr. E. P. Kavanagh, the Provincial Registrar, reported that ten new dentists registered in Newfoundland during the past year.

The Association unanimously endorsed the resolution of the Canadian Dental Association passed in September in Montreal, that we recommend to the public of Canada that communities having public water supplies adopt the procedure for water fluoridation best suited to their local needs; and for the purpose to seek competent dental, medical and engineering advice.

Dr. W. S. Goodwin, practising dentist in Newfoundland for the past fifty-four years and resident of Harbour Grace, was made a life member of the Society.

During the meetings at Grand Falls the Association was entertained by A.N.D. Company with a reception at Grand Falls House, and with a dinner at the Staff House, where Rev. Father Meaney of Windsor was the guest speaker.

Dr. Ball was also host to the visiting dentists at a reception in his home.

During their visit, the visiting dentists attended an ice-carnival show and also a hockey game at the Grand Falls Stadium.

The officers elected for the coming year are:

Past President—Dr. F. A. Janes.

President—Dr. R. W. Ball.

1st Vice-President—Dr. J. M. Darcy.

2nd Vice-President—Dr. T. E. Harris.

Secretary-Treasurer—Dr. D. Peters.

Dr. F. A. Janes was appointed as delegate to the Canadian Dental Association, with Dr. J. M. Darcy as alternate.

G. E. M.

British Columbia

The castle-like Empress Hotel in Victoria glistened in the morning sunlight as if to welcome the **Annual Convention of the British Columbia Dental Association** on Friday and Saturday, March 19th and 20th.

Attending the 7:45 breakfast Friday morning were 150 enthusiasts hailing from almost every corner of the province. Fifty more either overslept or were late. (Rather inexplicable, as the breakfast was included in the registration fee, and we do have some Scotsmen.) Dr. Harold Turner, the

President, gave his welcoming address and introduced the speaker, Dr. G. F. Amyot, Deputy Minister of Health, who spoke appreciatively of the advances in prevention made by our association in recent years and urged further measures of service.

The featured **Lecturers** were five men well-known in their fields:

Dr. Roland D. Fisher, Glendale, Calif. — "Prosthetics".

Dr. Hector R. MacLean, University of Alberta — "Roentgenology".

Dr. J. W. Neilson, University of Washington — "Periodontia."

Dean Scott Hamilton, University of Alberta — "Oral Surgery".

Dr. D. F. Magee, University of Washington — "Pharmacology."

Friday at noon Dr. Arthur Poyntz was chairman of the **Dental Health Luncheon** (which was crowded out) when an address was given by Miss Doris Noble, nutrition consultant of the B.C. Department of Health.

Over 200 (including the ladies fair) attended the Friday evening **Banquet** in the Crystal Ballroom, which was a dignified and inspiring occasion. Conducted with unique precision, it will live long in our memories. There were the introductory remarks by the president, followed by a musical interlude by the "Victoriennes". This group of Madrigal singers waltzed past the head table, curtsying to each notable in passing, and mounted the stage to sing a series of delightful musical numbers.

From the B.C. Government greetings were conveyed by the Honourable Eric Martin, Minister of Health. The well-known Dr. Brock Chisholm, who has now retired at Sooke near our capital city, gave the address of the evening, choosing as his subject "International Co-operation and the World Health Organization." He said: "Man must adjust himself to changing circumstances on this earth if he wishes to survive: we cannot be immune to the problems of the other millions of people on earth."

On **Saturday** morning Dr. Richard Cline gave a public address on fluoridation which was attended by both dentists and laymen. An interesting meeting evolved with Dick answering some unpredictable questions, mainly from the latter group.

These **Table Clinics** were presented on Saturday:

Preventive Dentistry . . . Drs. W. C. Hall and D. J. Yeo.

Amalgam . . . Dr. Ian Hamilton.

Porcelain . . . Dr. Ralph Colbourne.

Alloy Manipulation . . . Mrs. Mary Grosek (Dental Assistant).

Gold Inlay . . . Dr. Ken Morrison.

Plastic Filling . . . Dr. Tom Wall.
 Dental Photography . . . Dr. Joe Ryan.
 Endodontics . . . Vancouver Endodontia
 Study Club.
 Mouth Reconstruction . . . Dr. W. R.
 Scott.
 Implant Technique . . . Dr. Geo. Robb.
 Paedodontics . . . Drs. R. J. O'Neil and
 R. J. Dent.
 Orthodontics . . . Dr. Lloyd Chapman.
 Ticonium Construction . . . Canadian
 Dental Corps.

The **Saturday Luncheon** was an official affair with the head table graced by the executive and committee chairmen. Here the annual business meeting of the association took place, when reports of officers and committees were considered and approved. Elections placed at the helm for the new season:

President — Dr. C. M. Whitworth, Vancouver.

President-Elect—Dr. E. E. Martin, Vancouver.

Secretary—Dr. R. E. Cline, Vancouver.
 Treasurer—Dr. Max Nacht, Vancouver.
 Directors—Dr. R. L. Horne, Victoria; Dr. D. H. Warren, Vancouver; Dr. H. L. Coursier, Vernon; Dr. W. J. Chambers, New Westminster; Dr. W. E. Shaw, Mission; Dr. H. L. Purdy, Vancouver.

Dr. Doug Sutherland, retiring treasurer, received a presentation, an accolade for five years of outstanding service.

There followed the annual meeting of the **B.C. College of Dental Surgeons** with Dr. Harold Cline presiding. Even at this late hour of a long day many remained for the final business, which consisted chiefly of ratification of business done by committees of the Council of the College, our senior governing body.

After a rather strenuous two days there was relaxation at 8 p.m. in the beautiful library of the hotel, where cocktails loosened tongues and we whiled away the time with confreres until the supper dance began at nine.

The **Sunday Golf Tournament** was held at the Royal Colwood Golf and Country Club when the weather-man provided a third beautiful day. The prize-winners were:

Low Gross—Dr. B. Kjekstad.
 Low Net—Dr. W. A. MacDonald.
 2nd Low Net—Dr. A. Daysmith.
 24 Handicap—Dr. H. C. Gill.
 Hidden Hole—Drs. B. E. Metcalfe, R. R. Ross and W. A. Jefferies.

For a convention which proved to be a distinct success these Victorians, chairmen of committees, have earned kudos: Registration, Dr. W. A. MacDonald; Program, Dr. J. F. Mercer; Local Arrangements, Dr.

A. H. Gunning; Entertainment, Dr. T. H. Johns; Publicity, Dr. W. B. Milburn; Housing, Dr. C. B. Jameson; Host, Dr. Art Poyntz.

The March meeting of the **Fraser Valley Dental Society** was held in Abbotsford at the Jack and Jill Motaria. The speaker was Dr. Eric Nordin, periodontist of Vancouver, who spoke on the subject "Occlusal Equilibration for the General Practitioner". Dr. Nordin, with a background of experience and a splendid delivery, provided an informative meeting.

— D. H. M.

Ontario

The third dinner meeting of the 1954 session of the **Sudbury and District Dental Society** was held at the Canadian Legion Memorial Hall on March 31st.

The guest speaker was Dr. J. B. MacDonald, Chairman of the Division of Dental Research and Associate Professor of Bacteriology, at the Faculty of Dentistry, University of Toronto. His topic "The Philosophy and Practice of Dental Research" illustrated and defined the program of research at the Faculty of Dentistry, University of Toronto. Such a research programme may give some immediate tangible results to the dental profession. However, the research division has undertaken projects where results may not be determined for years. These results may very well alter the current teachings and concepts of dentistry.

The speaker was thanked by Dr. H. La-berge.

Guest speaker at a meeting of the **Hamilton Dental Association** was Dr. A. A. Antoni of the Ford Hospital, Detroit. Dr. Antoni, speaking on progress in the profession of dentistry, showed many slides depicting various cases of oral surgery.

Chairman at this meeting was Dr. Norman Robinson, President of the Association.

The annual visitation of dental offices sponsored by the **Dental Alumni Association** for the graduating class of the Faculty of Dentistry was held on Wednesday evening March 3rd, 1954.

Each student expressed his desire to visit an office in certain areas of the city. Consequently two offices in the West end of the city were kept open for the evening on their behalf, along with three in the Downtown



DR. W. JAMES SMITH,
President, Academy of Dentistry, Toronto.

area, three in the North End, and one in the East end.

Unfortunately the weather interfered with the pre-arranged plans and driving was very treacherous and consequently a small percentage of the students availed themselves of this opportunity. Those students who did venture forth were genuinely interested in the operation of a dental office, practice problems, and equipment. From past experience this project has been found to be worth while and we feel that this effort materially assists students in preparing for their new venture in life.

The following committees have been formed to conduct Alumni activities.

Membership

Doctors R. C. Moore, C. L. Strachan, Fenech, Pritchard, E. E. Jones, J. E. Tilson, Wachna and Sim.

Vocational Guidance

Doctors D. L. McKerracher, Gordon Chalmers, J. Fullerton.

Publicity

Doctors J. E. Tilson, S. Peterkin, Harry

Hutchinson, R. Leuty, Ernest Rollaston, Leckie.

Annual Meeting

Doctors Ernest Rollaston, Ben Gross, Jim Crawford, Bill Armstrong, Jim Boyd.

Student Reception

Doctors Gordon Chalmers, R. Leuty, V. A. Owens, S. Peterkin.

Scholarship

1. Memorial — Doctors Gordon Spinks, John Bothwell.

2. Alumni—Doctors W. W. Breslin, Marshall, R. Ellis, Fullerton.

Faculty Representative

Dr. Gordon Chalmers.

Nominating Committees

Dr. J. E. Tilson (with power to add to numbers)

J.E.T.

The final stated meeting of the **Academy of Dentistry**, Toronto, was held on March 11th in Osler Hall. The clinician on the occasion was Dr. W. K. Shultis, Associate in Orthodontics at the Faculty of Dentistry, University of Toronto. Dr. Shultis's outstanding paper was entitled "Occlusion in Preventive Dentistry".

Dr. A. J. Coughlan, President of the Canadian Dental Association, was a guest at the meeting following his tour of Western Canada. Dr. Coughlan discussed some of the activities and problems of the Canadian Dental Association.

Dr. Elmer Henderson, President of the Academy, was chairman of the meeting.

Following the business of the meeting, the new Executive was presented to the membership, and the incoming President, Dr. W. James Smith, expressed the appreciation of the Fellows of the Academy to the outgoing Executive for their excellent conduction of Academy affairs throughout the year.

Officers of the Academy of Dentistry, Toronto, for the year 1954-55 are as follows: Past-President—Dr. E. J. Henderson; President—Dr. W. James Smith; President-elect—Dr. J. Bevan King; Secretary—Dr. Harvey Milburn; Treasurer — Dr. Robert W. Marshall; Councillors — Drs. William A. Weir, J. A. Bigelow, E. Rollaston, C. Douglas Beierl, and Bruce Hord.

The President, Vice-President, and members of the **London Dental Society** were guests at the 5th annual public relations dinner of the Life Underwriters Association of London. This dinner was held at the Hotel London, and the guest speaker was R. Leighton Foster, QC, Toronto, general council for the Canadian Life Officers. Dr. D. E. Cousins is President of the London

Dental Society, and Dr. J. A. Guest is Vice-President.

Over 40 members of the **Niagara Peninsula Dental Society** heard an address by Dr. H. K. Brown, dental consultant to the Department of National Health and Welfare, Ottawa, at a recent dinner meeting.

Dr. Brown's address was devoted to the steps that are being taken by the Federal Department of Health to prevent the loss of oral tissue through disease or neglect. He explained that each province is at liberty to set up its own programme and to draw financial assistance from the "Grants in Aid" fund set up at Federal Headquarters, providing the programme was approved. He outlined the efforts being made by the various provinces, and concluded by saying that while dental decay was on the increase in most of the prosperous parts of Canada, the Government was making large annual expenditures on preventive programmes rather than anticipating expenditure in treatment after defects occurred.

Dr. Glenn Teal of Ridgeway expressed appreciation to Dr. Brown and a small gift was presented to him on behalf of those present.

The guest speaker at a recent meeting of the **South Waterloo Dental Society** was Dr. J. H. Johnson, professor of dental oral surgery at the University of Toronto and president of the Ontario Dental Association. His subject was "Some aspects of modern dental surgery".

The President of the Society, Dr. J. R. Grandy, who presided at this meeting, welcomed Dr. Johnson.

The following officers were elected for the ensuing twelve months: President, Dr. G. A. Cowan, Hespeler; Vice-President, Dr. John C. Dyer, Galt; Secretary-Treasurer, Dr. I. C. White, Galt.

Kent County Dental Society heard an interesting talk on problems in dental surgery given by Dr. B. E. Luck, oral surgeon of Lansing, Michigan, at a recent dinner meeting.

Dr. Ross Drummond, President of the Society, was in the chair, and guests from London and Sarnia were present.

At a recent meeting of the **Lambton County Dental Society**, members heard Dr. W. G. McIntosh, professor of periodontics at the University of Toronto, discuss "Early Treatment of Periodontal Diseases."

Dr. Frank Furlong of Windsor, a member of the board of the Royal College of Dental Surgeons for Ontario, was a guest at this

meeting, and Dr. G. Milne, president of the Society, was in the chair.

It was announced recently by Premier Frost that the **Faculty of Dentistry** and the **Faculty of Medicine** at the University of Toronto would be asked to investigate the results of fluoridation of drinking water.

Alberta

A well-attended meeting of the **Peace River District Dental Society** was held in Beaverlodge, February 17th, at which Dr. Rooney, secretary of the Alberta Dental Association of Edmonton, was guest speaker.

The main order of business was the election of an executive for the year 1954. The slate of officers elected was as follows:

President—Dr. M. Woronuk, Fairview.

Vice-President — Dr. G. McMurray, Beaverlodge.

Secretary-Treasurer — Dr. D. Deedrick, Peace River.

Directors — Dr. C. Compton, Grande Prairie; Dr. V. Erickson, Sexsmith.

After the meeting the dentists and their wives were entertained at the Beaverlodge Hotel, where a splendid banquet was provided and several interesting movie films were shown. For the remainder of the evening the social get-together was continued at the home of Dr. and Mrs. McMurray.

L. K. B.

The Faculty of Dentistry reports the following news:

Dr. Charles G. Duke recently attended a workshop on the teaching of dental materials at the School of Dentistry, University of Indiana, Indianapolis.

Dr. George A. Brass of the operative department recently spoke over radio station CKUA on Preventive Dentistry. Dr. Brass stressed the importance of the obligations of parents to their children in instituting early dental care. He mentioned the role of sugars in causing dental caries and the place of fluorides and antienzymes in their prevention.

Dr. A. J. Coughlan, President, and Dr. Don W. Gullett, Secretary, of the Canadian Dental Association, were recent visitors to the Faculty. They both addressed the student body. Dr. Coughlan stressed the importance of recent graduates taking an active part in their local dental societies. He also stressed the importance of the C.D.A. Pension Plan.

Dr. Gullett, in a few words, told about the World Health Organization. He mentioned the aims of this body, one of which is to remove the various prejudices between races.

General News

Further evidence that the anti-enzyme tooth pastes have failed to fulfill their claims for special protection against dental caries was reported in the February issue of the Journal of the American Dental Association.

The report was based on a study by Dr. Walter C. Hess, professor of biological chemistry and director of the department, School of Dentistry, Georgetown University, and Dr. Bernard K. Forscher, assistant professor. The two dental scientists reported that a test of sodium N-lauroyl sarcosinate, one of the anti-enzyme agents widely hailed as a dental decay inhibitor, showed that there "is a clear indication that the agent has failed to fulfill the claims made for it."

Lack of support for the original claims was reported also by the A.D.A. Council on

Dental Therapeutics. At its January meeting, the Council unanimously approved a resolution to the effect that it had reviewed the evidence of anti-enzyme dentifrices and had "found no satisfactory evidence of their effectiveness against tooth decay".

Dr. George C. Paffenbarger, chief of the A.D.A. research staff at the National Bureau of Standards, Washington, D.C., was installed as president of the International Association of Dental Research at the close of its 1954 meeting March 21 in French Lick, Ind. Dr. Paffenbarger has been a member of the A.D.A. research staff for more than a quarter of a century. New president-elect is Dr. Paul E. Boyle, of Philadelphia. Other officers for 1954-55 are Dr. Joseph F. Volker, of Birmingham, vice-president, and Dr. Edward H. Hatton, of Chicago, secretary-treasurer.

In Memoriam

Whitman S. Goodwin.—Dr. Whitman S. Goodwin passed peacefully away at his home, Harbour Grace, Newfoundland, 10 a.m., Sunday, 7th March, 1954, at the advanced age of 85 years.

Dr. Goodwin, Dean of our Newfoundland Dentists, in fact the first dentist to be registered in Newfoundland, was born at Baie Verte, New Brunswick, and following his graduating as Doctor of Dental Surgery, at Philadelphia Dental College, came to Harbour Grace in 1900, where he established a wide practice, making periodical visits to outside towns, chiefly on the east coast.

He worked consistently and conscientiously and about ten years ago his son, Dr. W. L. Goodwin, on graduating as D.D.S. at Toronto University, returned and entered into partnership with him. He was in attendance at his office until just a month ago, when he was taken ill and since then he had been confined to his home.

Dr. Goodwin was a faithful member of the United Church and was always to the fore in all the Church activities. An exemplary citizen, he was deeply interested in local affairs, and took a keen interest in sport of all kinds and was always ready to assist various sporting activities and clubs, and always had a ready and helping hand for the less fortunate. A keen lover of horses for many years, he owned outstanding animals, and took great pride in their prowess. He was a Past Master of Masonic Lodge "Harbour Grace A.F. and A.M.," a member of Shannon Chapter and an

Honorary Member of the Newfoundland Dental Association.

Of a kindly manner, generous, courteous and sincere, he made many friends in Newfoundland and the sections of the Province in which he served.

Left to mourn his passing, a wife, three daughters, Mrs. F. L. Munn of Toronto, Mrs. A. G. Godden and Mrs. E. A. Martin, Newfoundland, and two sons, R. Warren Goodwin and Dr. W. LeRoy Goodwin of Harbour Grace.

G. E. M.

Ralph M. Peacock.—Dr. Ralph M. Peacock of London, England, died on February 10th, 1954, following a long illness caused by an accident four years ago.

Dr. Peacock graduated from the Royal College of Dental Surgeons in 1899. During the First World War he served with the C.A.D.C., and after the Armistice he settled and practised in London.

Leon Joseph Lequyer.—Dr. Leon Joseph Lequyer of Saskatoon passed away on February 25, 1954. He was 59.

Dr. Lequyer practised in Saskatoon for thirty years.

During both world wars he served with the Canadian Dental Corps, and he was a member of the Canadian Legion and the Army, Navy and Air Force Veterans' Association.

Surviving are his widow, Charlotte, one daughter, Mrs. M. Farmer, of Santa Ana, Calif., and four sisters and a brother.

Frank Shaw.—Dr. Frank Shaw, formerly of London, Ont., died on March 12th at Biloxi, Miss. He was 64 years of age.

Born in Ridgetown, Dr. Shaw graduated from the Royal College of Dental Surgeons, Ontario, in 1915. During World War I he held the rank of Lieutenant-Colonel, and he was head of the army dental clinic for military district no. 1 with headquarters in London. After the war he practised in London, until 1926, when he moved to Wichita Falls, Texas. In 1944 he began to practise as a civilian dentist with the United States Air Force at Wichita Falls until 1947, and then at Biloxi, Miss.

Dr. Shaw was a member of the Baptist Church.

He is survived by his wife, the former Ruth Wallace; a son, Douglas, in London; a daughter, Eleanor, in San Antonio, Texas; and a brother, Ernest A. Shaw, of London.

William James Laflamme.—Dr. William James Laflamme of Woodstock, Ontario, died on March 17th at the age of 65.

After receiving his early education at Woodstock Collegiate, Dr. Laflamme graduated from the Royal College of Dental Surgeons in 1911. He practised in Toronto until World War I, when he joined the Dental Corps.

Active and well-known in hockey for many years, Dr. Laflamme played with the St. Michaels team of 1909 and the Dentals of 1917, when these teams won the Allan Cup. He coached the Montreal Maroons and the Toronto St. Michaels Clubs, acted as an N.H.L. referee, and in 1934 coached the Irish to a memorial cup. He was also prominent with Toronto Granites, Toronto Argonauts and London Mohawks.

Dr. Laflamme is survived by a sister.

Charles Frederick Gorham.—Dr. Charles Frederick Gorham, aged 89, of Saint John, N.B., died on the 25th of February after a short illness. He was born at Long Reach, King's County, and graduated from Pennsylvania College of Dental Surgery in 1890. He practised in Saint John until a few years ago when he retired. At an annual meeting of the New Brunswick Dental Society in 1940 he was made a life member of the Society. Dr. Gorham was an enthusiastic and active fisherman and was a member for a great many years of the Moss Glen Fishing Club. He was an Anglican by religion and a member of the Masonic fraternity. He is survived by one son, Richard C. Gorham, and two brothers.

Robert Ross Larmour.—Dr. Robert Ross

Larmour of Ottawa died on March 14 at the age of 62, after a lengthy illness.

Born at Gananoque, Dr. Larmour matriculated from Albert College, Belleville, and then for two years studied arts at the University of Toronto. In 1916 he graduated from the Royal College of Dental Surgeons, and after two years' service as a Captain in the Canadian Dental Corps, he practised in Ottawa until retiring in 1953.

Dr. Larmour was a member of All Saints Anglican Church, the Laurentian Club, Ottawa Dental Society, and Rivermead Golf Club.

He is survived by a brother, Dr. Russell Larmour, also of Ottawa.

Patrick Joseph Gallagher.—Dr. Patrick Gallagher of Winnipeg died at his home on March 16th. He was 69 years of age.

Born in Moncton, N.B., Dr. Gallagher later moved to Boston and graduated from Tufts College Dental School. He then returned to Moncton, where he practised from 1907 to 1911, when he moved to Winnipeg.

Dr. Gallagher was a prominent sportsman; he served as honorary secretary, vice-president, and president of the Manitoba Golf Association, and in 1945 he was made a life member of that Association. He served also on the board of governors of the Royal Canadian Golf Association.

Surviving Dr. Gallagher are his wife, three sons, and two daughters.

John Henry Purdy.—Dr. John Henry Purdy of Toronto died in Florida on March 11, 1954.

Dr. Purdy received his early education at Colborne, Ontario, and graduated from the Royal College of Dental Surgeons in 1901. He practised in Toronto until his retirement in 1946, and since then spent the winter in Florida and the summer in Milton, Ont.

Dr. Purdy was a member of St. George's United Church.

Predeceased by his wife, he is survived by a nephew in Milton.

Frank G. Borbridge.—Dr. Frank G. Borbridge of Winnipeg died on March 9, after a lengthy illness. He was 68.

Dr. Borbridge was born in St. Thomas, Ontario, and received his early education in that town. After graduation, he moved to Winnipeg where he practised for thirty years.

Surviving Dr. Borbridge are his wife, the former Ivy Alexander; two sons, Allen of Fort Gary, and Harry of Hudson; and five grandchildren.

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1954	St. Andrews-By-The-Sea, N.B.	September 5th - 8th
1955	Toronto, Ontario	May 15th - 18th
1956	Banff, Alberta	June 3rd - 6th

Future Events

Date	Function	Location	Officer	Address
May 16-19	Convention—Ontario Dental Association	Toronto	Miss D. Jutton	234 St. George Street, Toronto
May 17	4T3 Class Reunion	Toronto	Dr. E. B. Hooks	788 Eglinton Ave. E., Toronto
May 17	4T7 Class Reunion	Toronto	Dr. J. B. Hinch	2072A Danforth Ave., Toronto
May 17	1T4 Class Reunion	Toronto	Dr. E. H. Campbell	171 Yonge St., Toronto
June 1-5	Pacific Coast Dental Conference	Banff	Dr. H. Baden-Powell	308 Greyhound Bldg., Calgary, Alta.
June 8-14	Federation Dentaire Internationale	Scheveninger, Netherlands		
June 20-24	Berkshire Conference. Period. and Oral Pathology	Falmouth, Mass.	Dr. Irving Glickman	Tufts College Dental School, Boston, Mass.
July 6-9	American Dental Society of Europe	Paris, France	Mr. J. P. Maloney	110 Harley St., London W.1. England
Sept. 5-8	Canadian Dental Association & New Brunswick Dental Society Convention	St. Andrews By The Sea	Dr. S. K. Wetmore	147 Germain St., St. John, N.B.
Sept. 18	Convention of Northern Ontario Dental Association	North Bay	Dr. W. L. Boland	355 Ferguson St., North Bay, Ont.
Oct. 8	Dental Alumni Annual Meeting	Toronto	Dr. Ben Gross	816 Bathurst St., Toronto
Oct. 19-22	Montreal Dental Clubs' Annual Fall Clinic	Montreal	Dr. Bruce Ward	1414 Drummond St., Montreal, P.Q.

Short Graduate Courses

Date	Course	Location	Address
June 7-11	Periodontics 123C	New York University	Secretary, Post-graduate Division, New York University College of Dentistry, 209 East 23rd St. New York 10, N.Y.
June 7-25	Periodontics 124	New York University	as above
June 7-18	Complete Denture Prosthesis	New York University	as above
June 7-18	Partial Dentures	New York University	as above
June 7-18	Pulp-Canal Therapy	New York University	as above
July 12-16	Oral Pediatrics	Tufts College	Dr. Irving Glickman, Tufts College Dental School, Div. of Graduate and Post-graduate Studies, 136 Harrison Ave. Boston 11, Mass.
Jan 23-Feb. 6 1955	Orthodontics	Temple University	Dr. Louis Herman, Director of Post-graduate Studies, Temple University School of Dentistry, 3223 North Broad St., Philadelphia 40, Pennsylvania.

Notices

New York University College of Dentistry announces a two year full time post-graduate course in Periodontia and Oral Medicine in preparation for certification and teaching.

For information write: Secretary, Post-graduate Division, New York University College of Dentistry, 209 East 23rd St., New York 10, New York.

Journal

DE L'ASSOCIATION DENTAIRE CANADIENNE

Mémoire de la Société de Stomatologie de Québec présenté au Conseil de la ville de Québec

Note de la rédaction: Nous soumettons à nos lecteurs ce mémoire présenté aux autorités de la ville de Québec et pronant la fluoruration de l'eau de l'aqueduc et l'établissement de cliniques dentaires. Ce mémoire pourrait servir de modèle aux autres groupements professionnels de la province, qui désirent entreprendre les mêmes démarches.

Monsieur le Maire,
Messieurs les échevins de la
ville de Québec,
Messieurs:

Les chirurgiens-dentistes ont pour mission de traiter les dents et les tissus environnants. Cette mission qu'ils ont choisie librement, ils la remplissent le plus consciencieusement possible. De plus, ils ont aussi un autre devoir, celui d'informer le public des différents moyens généraux pour prévenir la carie dentaire, cette maladie qui est la plus répandue chez la race humaine.

Conscients de leurs responsabilités, le printemps dernier, les chirurgiens-dentistes de Québec prirent l'initiative d'examiner un certain nombre d'enfants âgés de 1 à 12 afin d'obtenir un aperçu de l'état de santé dentaire des enfants de la ville de Québec. Les résultats obtenus ont été compilés et étudiés dans un

tableau qui apparaît à la fin de ce rapport, comme appendice B. Nous pouvons résumer ce tableau dans les grandes lignes suivantes:

- 1° 90% des enfants ont des bouches défectueuses;
- 2° chacun de ces enfants a en moyenne 6 dents cariées;
- 3° 40% des dents permanentes sont déjà cariées;
- 4° 18% des enfants ont des déformations dento-faciales;
- 5° seulement 8% des enfants ont des dents obturées.

Il y a quelques variantes dans la santé buccale des différents quartiers, mais dans l'ensemble c'est un tableau très sombre et une situation déplorable qui n'est tout de même pas sans espoir parce que la ville de Québec n'a jamais connu un vrai programme d'hygiène dentaire et n'a pas encore profité des méthodes modernes et éprouvées de prévention de la carie dentaire.

Les campagnes d'hygiène dentaire, les conférences, les causeries radiophoniques, les brossages des dents, les régimes alimentaires, l'abstention de l'usage des

hydrocarbonés, des sucres, etc., l'éducation des parents, des éducateurs et des enfants sont des méthodes nécessaires mais qui ne peuvent à elles seules venir à bout d'un mal qui affecte les 9/10 de la population.

La recherche en prévention dentaire offre aujourd'hui des moyens de diminuer l'incidence de la carie dans une proportion qui va jusqu'à 60%.

La fluoruration de l'eau de consommation est une de ces méthodes qui aujourd'hui a dépassé le stage d'expérimentation et qui vient en tête.

A Stratford, Ont., où l'eau est naturellement fluorée, on remarquait une incidence peu élevée de la carie. Fort de ces constatations, la ville de Brantford fluorura artificiellement son eau à la même concentration que celle de Stratford. Ceci se passait en 1948. On constate maintenant que les enfants nés depuis ce temps présentent la même résistance à la carie que les enfants de Stratford. Le 1er septembre dernier, 784 municipalités des Etats-Unis desservant une population de 15 millions deux cents mille de population, avaient pris à leurs frais de fluorurer leur eau. L'exemple est aussi suivi par plusieurs villes canadiennes. La fluoruration consiste à ajouter une partie de fluorure de sodium par million de parties d'eau, et ce procédé a été accepté par l'Association dentaire canadienne, par l'Association médicale canadienne et par l'Association canadienne de la santé publique, de même que par toutes les associations médicales américaines à partir de l'American Dental Association et l'American Medical Association. Si ces associations ont endossé ce procédé, c'est qu'il ne contient aucun danger à condition qu'il soit employé à la dose plus haut mentionnée. D'ailleurs des expériences ont été faites à Newburgh (N.Y.), à Kingston où des enfants ont été soumis à des examens physiques complets comprenant analyses du sang et des urines, radiographies des mains, des bras, des jambes, examens spéciaux des yeux, des oreilles, etc. . . . Les résultats ont prouvé qu'il n'y avait aucune différence entre les

enfants demeurant dans des régions où l'eau a été additionnée de fluor, et ceux demeurant dans une région où l'eau ne contient pas de fluor.

C'est une méthode pratique en ce sens que toute la population peut en profiter sans aucune visite chez le dentiste et sans aucune procédure à suivre. Elle est aussi économique. Dans les différentes municipalités où elle a été employée, le coût en est estimé à 7c par personne en employant le fluorure de sodium et à 1½c en employant le silico-fluorure de sodium. Le service de fluoruration va de pair avec le service de chloration; c'est donc dire que son entretien ne nécessite pas de personnel supplémentaire. Les installations de machineries qui viendront s'aboucher à celles de la chloration coûteront environ \$10,000. Quant au coût d'entretien par année, il sera d'environ \$28,000 en employant le fluorure de sodium et entre \$11,000 et \$12,000 avec le silico-fluorure de sodium. Les deux produisent des effets identiques.

Malgré toutes les méthodes préventives qui peuvent s'appliquer, on ne peut tout de même pas empêcher entièrement la carie de s'attaquer aux dents et il faut aussi prévoir l'entretien annuel de la bouche des enfants.

A cette fin, il faudrait organiser, dans tous les quartiers, des cliniques dentaires accessibles à tous les enfants d'âge pré-scolaire et scolaire. Ce n'est pas là un procédé nouveau auquel ont pensé les chirurgiens-dentistes de Québec; ils suivent par là l'exemple de villes comme Vancouver, Toronto, Montréal et la plupart des villes des Etats-Unis. Toutes ces villes ont en moyenne une clinique par quartier, qui s'occupe de traiter gratuitement les enfants de toutes les classes de la société. Comme les enfants constitue une classe de gens assez difficile à traiter, et qu'ils demandent souvent une technique spéciale, ces cliniques sont sous la charge d'un dentiste qui s'est spécialisé dans l'art de traiter les enfants et qu'on appelle un pédodontiste. Ces pédodontistes seraient employés à demi-temps, et auraient un

salaire de base de \$3,000 avec augmentation statutaire. Il y aurait aussi une assistante au salaire de \$1,500 et nous ajoutons \$1,000 pour le loyer du local et son entretien.

Voilà deux méthodes par lesquelles on peut réduire de façon vraiment pratique la carie et la perte des dents chez les enfants de la ville de Québec. Il serait très urgent de mettre ces procédés à exécution le plus tôt possible, car les effets de la fluoruration ne se feront vraiment sentir que sur les enfants nés sous ce régime fluoruré. Quant aux cliniques, les résultats seront palpables dès les premières années.

Nous joignons à ce mémoire, comme appendice B, le tableau des statistiques de la carie dentaire chez les enfants de la ville de Québec, et comme appendice A, la résolution de la Société de Stomatologie de Québec, adoptée à l'unanimité à son assemblée du 22 janvier 1954, approuvant sans réserve notre demande pour améliorer la santé buccale de notre population et principalement des enfants.

Nous vous sommes reconnaissants, Monsieur le Maire et Messieurs les échevins de nous avoir donné l'opportunité de vous faire nos suggestions pour le plus grand bien de notre population. Connaissant vos sentiments à l'égard de la population québécoise, nous savons que vous ferez tout ce qui est humainement possible pour mettre en action toutes les mesures de prévention de la carie dentaire et des maladies de la bouche, et pour ce faire vous pouvez compter sur l'entière coopération des membres de la profession dentaire de la ville de Québec.

APPENDICE A.

RESOLUTION sur l'organisation d'un service dentaire dans la Cité de Québec.

A une réunion de la Société de Stomatologie de Québec, tenue au Cercle Universitaire, le 22 janvier 1954, la résolution suivante a été proposée par le docteur Gustave Patté secondé par le docteur Eugène Blouin et approuvée à l'unanimité.

Nous les dentistes de la ville de Québec, considérons:

1°—Que la carie dentaire malgré tous les efforts que font les dentistes pour l'enrayer fait de grands ravages au sein de notre population.

2°—Que si ne nous prenons pas immédiatement tous les moyens qui s'imposent pour diminuer la marche ascendante de la carie principalement chez les enfants, elle continuera d'augmenter à tel point que nous nous demandons sérieusement si la jeune génération qui fréquente les écoles aujourd'hui ne sera pas une génération édentée dans 10 ou 15 ans.

3°—Qu'en plus d'être un handicap à son développement intellectuel, la carie dentaire est très préjudiciable à la santé de nos enfants et si l'on considère les statistiques et que l'on réalise que chaque enfant dans la ville de Québec possède en moyenne 6 à 7 dents cariées dont 3 d'entre elles au moins infectées et souvent abîmées, on ne peut affirmer que nos enfants sont en santé.

4°—Que cette maladie est facilement contrôlable, à condition que nous prenions immédiatement tous les moyens qui s'imposent comme nous pouvons le constater dans tous les endroits organisés aussi bien dans notre pays qu'à l'étranger.

Les autorités municipales sont respectueusement priées de réorganiser le Département d'Hygiène Dentaire déjà existant et à ces fins, la Société fait les demandes suivantes:

a) Que la fluoruration de l'eau soit entreprise immédiatement. La Société considère que c'est un moyen préventif très efficace qui ne cause aucun trouble organique à condition d'être très bien contrôlée comme en font foi les expériences précises qui ont été faites depuis plusieurs années. Ce moyen de prévention a d'ailleurs été fortement recommandé par l'Association dentaire canadienne, l'automne dernier. Elle adoptait la résolution suivante dont copie a paru dans le Journal de l'Association dentaire canadienne du mois de décembre 1953 et qui se lit comme suit:

"Attendu que la carie dentaire dont souffrent la grande majorité des habitants du Canada, est reconnue comme un des problèmes de santé le plus importants de notre époque.

Attendu que plusieurs milliers de Canadiens à l'étranger ont bu durant toute leur vie de l'eau contenant des fluorures, à raison d'une partie de fluor pour un million de parties d'eau, à l'état naturel et qu'ils ont, de ce fait, bénéficié d'une réduction de la carie dentaire dans la proportion des deux tiers, sans souffrir de dérangements organiques, de l'avis des professions médicale et dentaire;

Et attendu qu'on a étudié le problème, depuis plus de huit ans, d'ajouter du fluor aux eaux des aqueducs, à raison d'une partie par million et que cette étude a porté sur l'influence dentaire et médicale de cette méthode;

Attendu que toutes ces études ont révélé les mêmes avantages dentaires que ceux donnés par l'eau contenant naturellement du fluor, tels qu'on les connaît depuis au-delà de 20 ans, avec la même absence de toute complication organique. La Société de Stomatologie fait sienne la résolution de l'Association dentaire canadienne, recommandant à la population du Canada résidant dans des municipalités dotées d'un système d'aqueduc, d'adopter une formule pour fluorurer l'eau qui s'adapte le mieux à leurs besoins locaux, et de consulter à cet effet les autorités dentaires et médicales, et de génie, compétence dans ce domaine."

b) Qu'une Clinique de Pédodontie soit organisée dans chacun des quartiers de la ville avec dans chacune d'elle un dentiste spécialisé en pédodontie pour la faire fonctionner.

Que cette clinique fonctionne tous les avant-midis des jours ouvrables.

Qu'une assistante dentaire soit nommée à plein temps pour assister le dentiste hygiéniste pendant les avant-midis se réservant l'après-midi pour faire de l'hygiène dentaire dans les écoles ou ailleurs

suivant les directives du directeur de la Division de l'Hygiène Dentaire.

Que ces cliniques soient organisées à raison d'une clinique au moins par année, afin de hâter la mise en application de ce nouveau plan.

*Statistiques dentaires des enfants d'âge scolaire de la ville de Québec.**

Calculées d'après les chiffres fournis par les dentistes de Québec durant la Semaine d'Hygiène Dentaire, du 12 au 18 avril 1953, lors de l'examen de la bouche de 3100 enfants de la ville.

Généralités

Durant l'année scolaire 1952-53, exactement 23,114 enfants ont fréquenté les écoles primaires de la ville. De ce nombre 3,100 enfants ont été examinés soit 13%.

Ces derniers, en plus d'être choisis au hasard dans chacune des écoles primaires, ont été divisés en nombre égal par classe, de la 1^{ère} année scolaire à la 6^e inclusive; de sorte que l'on peut conclure que les présentes statistiques nous donnent un aperçu à peu près exact de la situation dentaire de la gent écolière de notre ville.

10—Situation pour toute la ville. (Tableau I)

A— Sur les 3,100 enfants 2,760 avaient une bouche défectueuse (dents cariées) soit 89%. Si les dentistes avaient fait leurs examens avec toute l'instrumentation nécessaire (éclairage adéquat, Rayons X, etc.) il ne fait pas de doute qu'ils auraient trouvé quelques bouches de plus de défectueuses (probablement entre 90% à 92%).

En résumé près de 10% des enfants de la ville sont immunisés contre la carie dentaire. Ce pourcentage est à peu près normal et correspond à celui des autres endroits civilisés aussi bien dans notre pays qu'à l'étranger.

B— Le nombre de dents cariées se chiffre à 16,041, c'est-à-dire près de 6 dents cariées par enfant. En d'autres termes, nous pouvons affirmer en se basant sur les statistiques présentes que chaque enfant susceptible à la carie (90% de tous

*Voir Journal de l'Association dentaire canadienne, livraison de juin 1953, page 354.

les enfants de la ville) possède en moyenne 6 dents cariées. De plus, seulement 1,397 dents cariées temporaires et permanentes ont été obturées soit 8.7% seulement. Ce qui revient à dire que près de 92% des dents cariées de nos enfants ne sont pas obturées présentement et par conséquent sont vouées à l'extraction à brève échéance. Cette simple constatation explique à elle seule la raison des nombreuses bouches édentées chez nous.

C- Le nombre des dents permanentes cariées se chiffre à 7,503, soit 40%. De ce nombre, seulement 1,093 dents ont été obturées, soit 14% et comme il s'agit d'enfants âgés de 7 à 12 ans environ, les dents permanentes cariées dont il est question ici sont les molaires de 6 ans surtout et en moins grande quantité les incisives (surtout les incisives supérieures). Dans 84% des cas, ces dents ne sont pas réparées avec des résultats faciles à prévoir.

TABLEAU 1
SITUATION POUR TOUTE LA VILLE

—A—	
Nombre d'enfants dans les écoles primaires....	23,114
Nombre d'enfants examinés.....	3,100
Pourcentage examiné.....	13%
—B—	
Nombre d'enfants défectueux (caries).....	2,710
Pourcentage sur nombre d'enfants examinés....	89%
—C—	
Nombre de dents cariées.....	16,041
Moyenne de dents cariées par enfants.....	5.8
Nombre de dents obturées.....	1,397
Pourcentage sur nombre de dents cariées.....	8.7%
—D—	
Nombre de dents permanentes cariées.....	7,503
Pourcentage sur nombre de dents cariées.....	40%
Nombre de dents permanentes obturées.....	1,093
Pourcentage de dents permanentes obturées sur total des dents permanentes cariées.....	14.5%
—E—	
Nombre de dents temporaires cariées.....	8,474
Pourcentage sur dents cariées.....	60%
Nombre de dents temporaires obturées.....	304
Pourcentage sur nombre de dents temporaires cariées.....	3.6%
Nombre de dents temporaires à extraire.....	4,730
Pourcentage sur dents temporaires cariées.....	55%
—F—	
Nombre de cas de prophylaxie (mauvaise bouche).....	1,314
Pourcentage sur nombre d'enfants examinés....	42.4%
—G—	
Nombre de cas d'orthodontie.....	546
Pourcentage sur nombre d'enfants examinés....	17.6%

Quant aux dents temporaires cariées, elles se chiffrent à 8,474, soit 60% de toutes les dents cariées des enfants.

TABLEAU 2
SITUATION PAR QUARTIER

QUARTIER	% d'enfants défectueux	Moyenne de dents cariées par enfant	% de dents obturées sur nombre de dents cariées	% de dents permanentes obturées sur nombre de dents permanentes cariées	% de dents temporaires obturées sur nombre de dents temporaires cariées et à extraire	% de dents temporaires obturées sur nombre de dents temporaires cariées seulement.
Basse Ville..	95%	6.8	3.1	2.4%	3.5%	6.9%
Haute Ville. (Est)	88%	5.8%	5%	6%	2.4%	7.4%
Limoilou... (Ouest)	85.8%	5.5%	7.5%	11%	2.3%	5.8%
Haute Ville. (Ouest)	83%	4.4%	28.8%	36.2%	10.3%	22.5%

Quelles sont les dents temporaires cariées que les dentistes ont diagnostiquées? Surtout les petites molaires temporaires; normalement ces dents là ne devraient pas être extraites avant l'âge de 10 ans, afin de prévenir toute déviation du maxillaire ou de la mandibule suivant le cas et dans le cas contraire, il faut théoriquement parler faire soit un partiel ou un appareil de maintien. Or sur les 3,100 enfants examinés 1,899 avaient 10 ans ou moins et le nombre de dents temporaires à extraire se chiffrent à 4,038 soit au delà de 2 dents temporaires par enfant.

Le nombre de dents temporaires obturées se chiffre à 304 sur 8,474 dents cariées, sont 3.6% seulement. Quelles sont les dents qui devraient être obturées en tenant compte de la situation actuelle des enfants? Toutes les dents temporaires cariées mais réparables dont fait mention le rapport chez les enfants âgés de 10 ans ou moins, se chiffrent exactement à 3,415, or seulement 284 dents ont été obturées, ce qui représente 8.2%.

2o- Situation par quartier. (Tableau II)

Dans ce tableau, la ville a été divisée en quatre parties, afin de connaître la situation dentaire particulière à ces sections et les comparer entre elles, ce qui sera de nature à aider dans l'organisation de l'hygiène dentaire dans la ville,

La basse-ville est la plus négligée. Chaque enfant de ce quartier possède en moyenne près de 7 dents cariées et non traitées et seulement 3% des dents cariées ont été obturées.

Vient ensuite la haute-ville-est, (c'est-à-dire la partie de la haute ville comprenant les enfants examinés à l'école St-Jean-Baptiste et le Palais Montcalm). Près de 6 dents cariées par enfant, 5% des dents cariées ont été obturées.

Le quartier Limoilou est un peu mieux en ce qui concerne les dents permanentes 11% ont été obturées en comparaison de 2.4% à la basse-ville et 6% à la haute-ville-est. Par contre, c'est à cet endroit que les dents temporaires sont le plus négligées; 2.3% seulement des dents cariées ont été obturées. C'est à haute-ville-ouest (partie de la ville comprenant les enfants examinés à l'école St-Sacrement et à la Salle des Chevaliers de Colomb 446) que la situation est la meilleure bien qu'elle laisse à désirer, si nous la comparons avec celle qui existe dans les endroits bien organisés au point de vue d'hygiène dentaire.

30- Situation par année scolaire. (Tableau III)

La première constatation à faire c'est la moyenne des dents permanentes cariées; à 7 ans, 1 dent par enfant; 8 ans, près de 2 dents par enfant; 9 ans, 2 dents

TABLEAU 3
SITUATION PAR ANNEE SCOLAIRE

Année scolaire	Moyenne d'âge	Moyenne de dents cariées par enfant (defectueux)	Moyenne de dents permanentes cariées par enfant et non traitées	Moyenne de dents temporaires cariées par enfant et non traitées	Pourcentage de dents obturées sur total de dents cariées	Pourcentage de dents permanentes obturées sur total de dents permanentes cariées	Pourcentage de dents temporaires obturées sur total de dents temporaires cariées et à extraire	Pourcentage de dents temporaires obturées sur total de dents temporaires cariées mais réparables	Pourcentage de dents temporaires à extraire sur nombre de dents temporaires cariées
1e.	7	6.7	1	4.9	4.8%	14.4%	3.1%	6.2	50%
2e.	8	6.7	1.9	4.3	4.9%	8.3%	3.6%	7	52.9%
3e.	9	5.7	2.4	3.3	6.6%	10.5%	2.7%	6	54.2%
4e.	10	5.2	2.8	2.4	13.3%	20.3%	5.5%	15	64%
5e.	11	5.5	3.5	2	10.9%	14.8%	3.8%	12.6	68.9%
6e.	12	5	4.3	1	22.8%	20%	—	—	—

½ etc. Or toutes ces dents cariées sont les molaires de 6 ans à l'exception de quelques incisives chez les enfants des dernières classes, à remarquer que le nombre augmente avec l'âge, précisément parce qu'elles ne sont pas réparées comme l'indique la colonne "o/o" des dents permanentes cariées.

La même constatation pour les dents temporaires cariées; nous n'avons qu'à suivre le tableau pour comparer.

La dernière colonne nous donne un aperçu du nombre de dents temporaires à extraire, au delà de 50%.

Réchauffons nos solutions anesthésiques

Les anesthésies locales intragingivales et intraligamentaires sont, comme chacun le sait, plus actives, moins pénibles, lorsque les solutés sont judicieusement tiédifiés.

Injecter des solutions à température au moins égale à celle de la chaleur animale est déjà un énoncé physico-biologique.

Méfions nous cependant, de dépasser la limite de sécurité; les propriétés des combinaisons synthétiques, extrêmement labiles, risquent d'être modifiées au-delà de 40 degrés centigrades provoquant de fâcheuses réactions in vitro.

Cette susceptibilité des compositions anesthésiques fait que le réchauffement intempestif des seringues, vides ou chargées, dans ou près d'une flamme, est une manœuvre à bannir, d'autant plus qu'en raison de l'excellente conductibilité thermique de la plupart de nos seringues en cuivre massif chromé, les écarts de température sont incontrôlables.

Mais, puisque nous avons la chance de posséder sur nos Units, des systèmes de réchauffoirs électriques, réglables même, remplaçons les flacons pulvérisateurs ou le verre central par des éprouvettes ou autres bocalx calibrés.

Dans l'une, nous conserverons des seringues à température constante, sous leur couvercle de porte-seringues, dans l'autre, nous disposerons une réserve d'ampoules, tubules, maintenues tiédies pour la journée.

Nous pourrions adjoindre, intérieurement à ces récipients, un thermomètre type "aquarium". Ce modèle est court, bien étalonné, fixable par une ventouse, d'un prix modique. Les curseurs des rhéostats définitivement réglés, le problème des "tiédisseurs" d'ampoules se trouve résolu, en toute simplicité.

Nous répétons: injecter des solutions à température au moins égale à celle de la chaleur animale, c'est respecter avec logique en pharmacothérapie le conformisme physiologique.

Max Pouilley, *L'Information Dentaire*, 17 décembre 1953.

Sur la tombe du Dr Hamel

Le dernier des preux

On savait le docteur Philippe Hamel gravement atteint; on s'attendait même à sa mort d'un jour à l'autre. La nouvelle de son décès a quand même consterné ses amis. On ne s'habitue pas à l'idée qu'un homme bâti en force comme lui doive disparaître à un âge relativement jeune.

Le docteur Hamel était depuis déjà plusieurs années un homme marqué. Il a persisté à travailler tant qu'il en a eu la force. Sa volonté d'action était si forte qu'elle commandait à un corps dont les forces physiques étaient épuisées. Car le docteur Hamel était un travailleur comme on n'en rencontre pas souvent. Comme dentiste, il faisait des journées qui auraient écrasé un homme ordinaire. Ses loisirs, il faudrait plutôt dire ses nuits, il les employait à lire et à annoter des rapports, à classer des documents, à poursuivre des enquêtes économiques et sociales. Il n'était peut-être pas ce qu'on peut appeler un homme cultivé, mais il était renseigné comme il en est très peu.

Le docteur Hamel occupera une place importante dans l'histoire politique de la province de Québec. Apparemment, aucun penchant naturel ne l'attirait vers la vie publique. Comme dentiste, il jouissait d'un grand crédit auprès de sa clientèle et de l'admiration de ses confrères. Ceux-ci lui témoignèrent, à plusieurs reprises, l'estime dans laquelle ils le tenaient. Ce n'est pas par ambition personnelle ni par goût de la publicité, que le docteur Hamel se lança au faite d'une carrière prestigieuse, dans la vie publique. Il voulut servir ses compatriotes.

C'est comme adversaire des trusts, et plus particulièrement du trust de l'électricité, que le docteur Hamel s'imposa d'abord à l'attention publique.

On était au plus creux de la dépression économique. Les misères du peuple met-

taient davantage en évidence les abus des monopoles. Le docteur Hamel consacra un nombre incalculable de soirées et même de nuits à étudier l'histoire des compagnies hydro-électriques du Québec, à écheniller leurs rapports financiers, à exposer au public les abus dont elles se rendaient coupables. D'autres se seraient sentis accablés par cette tâche herculéenne. Le docteur Hamel manifesta en la circonstance une persévérance, pour ne pas dire un entêtement, qui fut la note dominante de toute sa carrière. Il mobilisa l'opinion publique par des articles de journaux, par des conférences, par des assemblées publiques, par l'action politique.

L'action politique; il ne possédait aucune des qualités qui font le politicien. Il était trop intransigeant pour s'accommoder aux nécessités de l'action électorale. Il était incapable de plier ses idées aux exigences des circonstances. Il était un bloc de granit que le choc le plus violent n'arrive pas à ébrécher.

C'est donc par conviction pour la poursuite de sa lutte contre les trusts, qu'il entra dans l'arène politique. De bonne heure, il se rallia à l'Action libérale nationale. Quand Paul Gouin mit fin à l'accord qu'il avait conclu avec Duplessis, le docteur Hamel continua l'alliance, convaincu qu'il fallait par dessus tout écraser le régime Taschereau et du même coup couper les sept têtes de l'hydre.

Son désenchantement fut grand, quand il se rendit compte que Duplessis était rien de moins que la doublure de Taschereau. Il avait cru opérer une révolution; il constata avec dépit que son action avait abouti à un simple déplacement d'intérêt.

L'éphémère parti national n'arriva pas à rallier les suffrages d'un électorat trompé et désabusé. Mais chaque fois qu'il y eut dans Québec un sursaut de révolte, on vit le docteur Hamel payer de sa personne et de son argent. Il fut au premier rang de la lutte durant la campagne du plébiscite et il donna très tôt son adhésion au Bloc populaire canadien.

Le docteur Hamel a exercé une in-

fluence plus profonde qu'on est porté à le croire. Un ami nous rapportait récemment la conversation de jeunes ingénieurs canadiens-français au service d'une des plus puissantes compagnies hydro-électriques du Québec. Ils critiquaient âprement les idées et les gestes du docteur Philippe Hamel, prétendant que ses accusations étaient exagérées, que ses projets de réforme étaient inapplicables, et le reste. Puis l'un d'eux eut un moment de réflexion, se tourna vers ses interlocuteurs et dit: Malgré tout, si nous occupons aujourd'hui des postes importants dans notre compagnie, si telle et telle réformes ont été opérées, nous le devons au docteur Hamel.

Combien y a-t-il ainsi de Canadiens français qui peuvent dire merci à ce dentiste de Québec? Impossible d'en faire le calcul; mais il n'est pas exagéré d'affirmer que tous les Canadiens français, à un titre ou à un autre, sont redevables de quelque chose au docteur Hamel.

Est-il besoin de mentionner que le docteur Hamel fut parmi les amis les plus sûrs et les plus constants du Devoir. Même quand notre journal refusait de l'appuyer, même quand il le combattait au moment de la fondation du parti national, le docteur Hamel lui restait fidèle. Il avait même des paroles de blâme pour ses amis qui se désabonnaient et qui en incitaient d'autres à les imiter. Périodiquement, c'est-à-dire plusieurs fois par année, il envoyait un chèque à l'administration en témoignage de son estime et comme geste pratique pour le soutien d'un journal libre.

Le docteur Hamel passera à l'histoire pour avoir été un homme d'une inflexible droiture. Rien ni personne ne pouvait le faire plier, quand il estimait être dans le vrai. On a dit de lui qu'il était intransigeant, voire entêté. Il était avant tout un homme honnête incapable de tricher avec lui-même. Avec lui vient de s'éteindre le dernier des peux. Gérard FILION



Photographie de l'Alpine Inn
à Ste-Marguerite dans les Laurentides
où aura lieu le congrès annuel de la Société dentaire de Montréal
les 6, 7, 8 juin 1954

Société Dentaire de Montréal

CONGRES ANNUEL 1954

AU ALPINE INN (STE-MARGUERITE)

dimanche, le 6 juin 1954

- 2:00 hrs p.m. — Enregistrement à l'hôtel.
6:30 hrs p.m. — Souper.
8:00 hrs p.m. — Danse de folklore — Concert.

lundi, le 7 juin 1954

- 9:00 hrs a.m. — Inscription.
10:15 hrs a.m. — Ouverture du congrès. Thème: "Prévention des lésions précancéreuses et cancéreuses."
10:30 hrs a.m. — Session générale:
Conférencier: Dr Lester W. Burkett, doyen de la faculté dentaire de l'Université de PENNSYLVANIE et auteur de plusieurs manuels, dont "L'ORAL MEDECINE"
Sujet: "LÉSIONS MALIGNES DES MAXILLAIRES."
12:30 hrs p.m. — Déjeuner-causerie de la Maison Frosst.
2:00 hrs p.m. — Cliniques de table.
3:45 hrs p.m. — Session générale.
Conférencier: Dr Lester W. Burkett.
Sujet: "PATHOLOGIE DE LA LANGUE."
6:30 hrs p.m. — Dîner annuel du Président.
9:00 hrs p.m. — Divertissements.

mardi, le 8 juin 1954

- 9:30 hrs a.m. — Enregistrement.
10:00 hrs a.m. — Session générale.
Conférencier: Dr Albéric Marin, de Montréal.
Sujet: "PREVENTION ET DIAGNOSTIC DES LÉSIONS PRÉCANCÉREUSES DES MUQUEUSES ET DE LA PEAU."
12:00 hrs midi — Déjeuner-causerie.
2:00 hrs p.m. — Golf, tennis, natation, excursions, cinéma, temps libre.
En cas de pluie: Séance de cinéma.
7:00 hrs p.m. — Coquetel-buffet danse.

mercredi, le 9 juin 1954

- 9:00 hrs a.m. — Discussions par groupes.
Conférenciers et sujets:
1) Dr Jean Jacques Rives, de France.
"Prothèse complète."
2) Dr Guy Lefrançois, de Montréal.
"Couronnes & Ponts."
3) Dr M. Clermont, de Montréal.
"Anesthésie générale pour le dentiste."
4) Dr G. de Montigny, de Montréal.
"Chirurgie pratique."
5) Dr G. Pelletier, de Montréal.
"Périodontie pratique."
6) Dr C. Finkelstein, de Montréal.
"Incrustations."
11:00 hrs a.m. — Forum (avec les conférenciers précédents.)
12:00 hrs a.m. — Déjeuner compris dans les honoraires d'inscription.

N.B.—M. Williamson, directeur du plan d'assurance-pension-santé de l'Association dentaire canadienne, sera présent durant les 3 jours du congrès.

Directeur du congrès: Louis Lépine, D.D.S., 1538 ouest Sherbrooke.

Nouvelles de l'Association

Congrès national de 1954

Il aura lieu à St-André-sur-mer, au Nouveau-Brunswick, du 5 au 8 septembre. Les Gouverneurs se réuniront du 1er au 4 septembre.

Les détails du programme et tous les renseignements touchant le transport parviendront aux membres bientôt. Entre-temps, on peut écrire au docteur A. D. Bona, président du Comité du Logement, à 82 rue King, St-Jean, N.B.

Réduction des tarifs de chemin de fer

L'Association canadienne des Passagers a permis une réduction de tarifs pour les personnes qui se rendront au Congrès annuel à St-André-sur-Mer. Les épouses et les enfants des membres de l'A.D.C. peuvent aussi profiter de ces tarifs de faveur.

Pour bénéficier de ces diminutions, les voyages doivent s'effectuer aux dates suivantes:

des endroits de l'ouest (à l'ouest de Fort William et Armstrong, Ont.) du 26 août au 3 septembre inclusivement.

des endroits de l'est (de Fort William et Armstrong, Ont.) et de tous les endroits à l'est, excepté Terre-Neuve) du 28 août au 5 septembre inclusivement.

Pour obtenir ces billets à prix réduits, il faut présenter un certificat d'identification en achetant les billets. On peut obtenir un certificat en écrivant au Secrétaire, Association dentaire canadienne, 234 rue St-Georges, Toronto.

Relevé économique

Avez-vous rempli le questionnaire en question? Pour rendre ce relevé efficace, il faut un nombre appréciable de réponses. Les renseignements que fournit le questionnaire sont essentiels au progrès de l'Association et aux intérêts de la profession. On demande votre collaboration pour cette entreprise; il faut se hâter.

Résolution importante au sujet de la fluoruration.

La société médicale du Comité d'El Paso a approuvé la résolution suivante, le 9 décembre 1953:

Résolution au sujet des effets de la teneur du fluor dans l'eau de l'aqueduc.

Attendu que l'eau de Colorado Springs renferme une teneur de fluor (2.6 parties par millions) depuis environ 75 ans;

Il est déclaré qu'à la suite d'un exercice médical prolongé à Colorado Springs, les membres de la Société médicale d'El Paso n'ont jamais décelé de symptômes cliniques découlant de l'usage de cette eau. On sait, toutefois, qu'un excès de fluor peut occasionner un émail madré.

Il est décidé, de plus, que cette déclaration soit classifiée dans les archives et qu'elle soit mise à la disposition de la profession dentaire.

(Une lettre jointe à cette résolution dit que la teneur du fluor dans la région oscille entre 2.6 et 8 p. p. m. et que la Société compte 130 membres.) *

La faculté dentaire de l'Université de Toronto reçoit un million.

On peut lire dans le budget présenté par l'Hon. Leslie M. Frost, trésorier de la province d'Ontario, à la Législature d'Ontario, le 11 mars 1954, le texte suivant:

"Un octroi capital d'un million de dollars sera fait à l'Université de Toronto pour agrandir sa faculté dentaire. Les députés se rendront compte qu'il y a des rapports étroits entre l'hygiène médicale et dentaire. Le Canada ne compte que 5 facultés dentaires, dont la plus considérable est en Ontario. L'augmentation de la population, seulement en Ontario, justifie un accroissement des facultés d'enseignement; si on considère les demandes qui nous viennent des autres provinces, le besoin se fait plus impérieux. Il faut augmenter les disponibilités d'enseignement en Ontario non seulement au bénéfice de la province, mais aussi pour tout le Canada; et à cause des beinfaits que l'accroissement des facultés d'enseignement dentaire procurera au pays tout entier et à cause du rôle que joue l'hygiène dentaire dans le maintien de la santé en général, il faut espérer que le Gouvernement du Canada imitera l'exemple de la province d'Ontario en fournissant sa part de subsides pour ce projet."

Réunion de la Fédération dentaire internationale, à La Haye, du 8 au 13 juin.

Les membres de l'Association dentaire canadienne sont invités à assister au 42e congrès annuel de la Fédération dentaire internationale. Cette réunion est organisée conjointement avec le congrès du jubilé de la profession dentaire de Hollande.

Le congrès a lieu plus précisément à Scheveningen, qui est un endroit de villégiature au bord de la mer, à quelques

milles de La Haye. Le congrès, qui durera six jours, comprend un programme scientifique où seront présentées des conférences traitant de la prévention de la carie, de la périodontoclasie et des malocclusions. Un programme social d'envergure a aussi été préparé. On peut retenir ses chambres d'hôtel et obtenir d'autres renseignements en s'adressant au docteur G. Arnold, Bureau du Congrès, Adriaan Geokooplaan, La Haye, Hollande.

La Commission américaine des Maladies chroniques endosse la fluoruration

La Commission américaine des Maladies chroniques vient d'endosser la fluoruration de l'eau des aqueducs comme mesure de protection contre la carie dentaire. Au cours de son congrès tenu durant trois jours à Chicago pour étudier les problèmes suscités par les longues maladies, la Commission, le 19 mars dernier, a répondu à des demandes de renseignements au sujet de l'influence des fluorures sur les maladies chroniques et s'est prononcé en faveur de la fluoruration en priant les municipalités des Etats-Unis "d'adopter cette mesure de santé publique pour prévenir une maladie chronique, la carie dentaire."

Cette décision avait été motivée par le rapport d'un comité chargé de l'étude de cette question et nommé par le Bureau des Directeurs de la Commission. Ce comité, sous la présidence du docteur Kenneth F. Maxcy, professeur d'épidémiologie à la faculté d'hygiène et de santé publique de l'Université John Hopkins comprenait les docteurs Edward J. Steiglit, spécialiste des maladies du vieil âge, de Washington, Nathan Shock, chef de la section de gérontologie, National Institutes of Health, Service de Santé publique des Etats-Unis.

Le comité fit part à la Commission que "des recherches élaborées entreprises sur la toxicité des composés du fluor n'ont pas révélé que l'absorption soutenue d'eau contenant des fluorures au taux d'environ une partie par un million portait un préjudice à la santé des adultes ou à des malades atteints de maladies chroniques."

S'il y a un risque, le comité déclarait-il, il est si faible et si indécélable que des recherches attentives entreprises durant plusieurs années n'ont pas réussi à l'identifier.

Léonard W. Mayo, directeur de l'Association d'Aide aux Enfants infirmes de la ville de New York et président de la Commission, a précisé que c'est la première fois, depuis la fondation de la Commission, il y a cinq ans, que celle-ci endossait une mesure d'une telle positivité en faveur de la santé publique.

La Commission américaine des Maladies chroniques est un organisme indépendant, sans but lucratif, composé de 34 membres choisis dans les différentes sphères qui s'occupent des maladies chroniques. Elle a été fondée par l'Association américaine des Hôpitaux, l'Association médicale américaine, l'Association américaine de Santé publique et l'Association américaine du Bien-Etre public. Cette déclaration affirme que l'assentiment général des hommes de science est que la fluoruration des eaux publiques pour la prévention de la carie dentaire ne cause aucun préjudice à la santé.

Le comité Maxcy précise que ses renseignements sur la question lui sont venus de deux sources: (1) des recherches sur le métabolisme des fluorures chez l'homme et chez les animaux de laboratoire; (2) des observations recueillies au sein de populations qui ont consommé de l'eau qui contenait une teneur de fluor supérieure à la dose recommandée.

Le rapport indique que ces deux sources de renseignements ne montrent pas de préjudice sur la santé des personnes bien portantes et sur celle des personnes malades.

La déclaration insiste sur le fait que des partisans de la fluoruration avaient prôné qu'une proportion trop grande de fluor était dommageable et qu'il était souhaitable, quand la chose était pratique, d'enlever l'excès des fluorures naturels de l'eau.

Des recherches entreprises depuis dix ans montrent que l'immunité contre la

carie dentaire procurée par les fluorures, qui se trouvent naturellement dans l'eau, se compare avec celle donné par l'addition artificielle des mêmes substances.

La Commission note que la fluoruration n'est pas une mesure de santé publique récente. Plus de 3,000,000 de personnes résidant dans des régions, où l'eau contient naturellement des fluorures dans une proportion idéale et même au-delà de celle recommandée pour la prévention de la carie dentaire, se portent très bien.

L'industrie du sucre consacre \$1,800,000. pour une campagne de relations extérieures

Selon la livraison du 6 mars de Editor and Publisher, l'industrie du sucre a commencé un programme d'annonce et de relations extérieures, qui durera trois ans, pour persuader le public entre autres choses que le sucre n'engraisse pas, même qu'il devrait faire partie d'un régime alimentaire pour perdre du poids. Le coût de cette campagne serait de l'ordre de \$1,800,000. La Sugar Information Inc., qu'on dit être l'organe éducationnel de cette industrie, assume la direction de la campagne. On fait paraître dans les revues et les journaux à fort tirage des Etats-Unis des annonces qui prétendent que le sucre peut aider à combattre l'obésité parce qu'il augmente la teneur du sucre du sang et par le fait même diminue l'appétit.

Editorial du Globe and Mail, de Toronto, le 3 avril 1954

L'offre du Premier Ministre Frost de donner autant que le gouvernement fédéral pour l'augmentation des facilités d'enseignement de la faculté de chirurgie dentaire de l'Université de Toronto devrait retenir l'attention immédiate du gouvernement d'Ottawa.

C'est un fait reconnu, qui a été souligné par le gouvernement fédéral, que le pays manque de dentistes. Cinq universités seulement forment des dentistes. La faculté dentaire la plus considérable est celle de Toronto. Il serait logique qu'Ottawa favorise l'augmentation des facilités de Toronto, puisque tout le pays en profiterait.

L'Honorable Martin, ministre de la Santé, n'est pas sans connaître la détermination de l'ancien premier ministre King de doter le pays, par des octrois pour la santé, de facilités et de standards techniques tels que tous les citoyens canadiens seraient en mesure de se faire traiter d'une façon adéquate. Actuellement, la population du Canada ne peut certes pas recevoir les soins dentaires dont elle a besoin, surtout parce qu'il n'y a pas un nombre suffisant de dentistes et parce que les universités canadiennes ne peuvent pas en former un plus grand nombre avec les moyens dont elles disposent.

M. Frost déclarait que la province, à cause de certaines circonstances, se voit parfois dans l'obligation de refuser certains octrois fédéraux donnés pour la santé de la population; ces octrois demeurent toujours à la disposition des provinces; il suggérerait que ces argents soient plutôt versés pour agrandir la faculté dentaire. Voilà une demande raisonnable! Le gouvernement fédéral fait bien peu pour l'enseignement universitaire et il n'y a aucune raison morale contre un octroi substantiel. M. Frost a déjà consacré un million dans ce but et il est prêt à donner autant qu'Ottawa. Voilà un défi que M. Martin devrait relever!

**Réunions de comités au secrétariat
Comité d'Etude sur l'Assurance-**

Santé	23-24 avril
Exécutif	13-14 avril
Conseil d'Enseignement dentaire	21-22 juin

Nombre des étudiants en chirurgie dentaire, 1953-54

Plus bas, on pourra consulter des tableaux qui indiquent le nombre des étudiants aux études dans les facultés dentaires pour l'année académique 1953-1954.

Points à noter.

- 1) le nombre total des étudiants est de 707; c'est le total le plus bas depuis 1945-1946 (voir tableau 3);
- 2) le nombre des diplômés, l'an dernier, était de 178; le nombre moyen des finissants durant les dernières quatorze années est de 163 (voir tableau 4);
- 3) la proportion du nombre des étudiants d'une province en rapport avec la

population de cette province a peu de signification quant à sa faculté dentaire (voir tableau 7);

- 4) l'Association dentaire américaine rapporte que 41 étudiants canadiens fréquentent les facultés dentaires des Etats-Unis. Autrefois, la plupart de ces étudiants faisaient leurs études dans

les écoles dentaires de l'ouest des Etats-Unis et on prenait pour acquis qu'ils venaient de Colombie britannique. Cette année, environ 50% de ces étudiants canadiens fréquentent des écoles autres que celles situées sur la côte occidentale. Par contre, 27 étudiants originaires des Etats-Unis font leurs études au Canada.

TABLEAU 1

Inscription globale des étudiants dans les facultés dentaires du Canada au 2 janvier 1954

Université	1ière	2ième	3ième	4ième	hommes	femmes	Total
Dalhousie.....	12	12	12	14	47	3	50
McGill.....	32	37	36	37	142	—	142
Montréal.....	43	17	18	20	97	1	98
Toronto.....	77	80	72	70	284	15	299
Alberta.....	30	27	28	33	116	2	118
Totaux.....	194	173	166	174	686	21	707

TABLEAU 2

Nombre maximum d'étudiants pouvant être acceptés en 1ière année dans les différentes facultés

Dalhousie.....	12
McGill.....	35
Montréal.....	60
Toronto.....	65
Alberta.....	30
Total.....	202

TABLEAU 3

Résumé des inscriptions dans les facultés dentaires du Canada de 1940-1953 (inclusivement)

Faculté	Dalhousie	McGill	Montreal	Toronto	Alberta	Total
1940-1941.....	31	58	104	210	51	454
1941-1942.....	25	61	118	232	49	485
1942-1943.....	25	67	139	270	53	554
1943-1944.....	22	67	154	255	24	522
1944-1945.....	28	51	162	264	34	539
1945-1946.....	27	73	184	180	54	518
1946-1947.....	38	111	188	340	108	785
1947-1948.....	37	127	208	435	115	922
1948-1949.....	41	146	224	478	123	1012
1949-1950.....	48	147	225	478	136	1034
1950-1951.....	48	145	196	380	114	883
1951-1952.....	49	145	140	300	121	755
1952-1953.....	50	141	111	294	123	719
1953-1954.....	50	142	98	299	118	707

TABLEAU 4

Nombre total de diplômés durant les années 1940-1953 (inclusivement)

Faculté	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953
Dalhousie.....	12	7	8	11	6	8	0	10	9	6	11	12	12	14
McGill.....	13	18	9	26	12	13	5	18	15	34	36	37	36	34
Montréal.....	23	14	31	18	37	30	41	36	38	45	42	69	55	20
Toronto.....	56	45	40	103	61	58	56	75	24	75	168	152	85	75
Alberta.....	13	13	32	8	24	7	0	10	13	20	49	25	27	35
Totaux.....	117	97	120	166	140	116	102	149	99	180	306	295	215	178

Pour l'année 1953

	hommes	femmes
Dalhousie.....	13	1
McGill.....	34	0
Montréal.....	20	0
Toronto.....	73	2
Alberta.....	34	1
	174	4

TABLEAU 5

Distribution des étudiants par provinces et pays étrangers dans les facultés dentaires du Canada au 2 janvier 1954

Faculté	Terre-Neuve	Ile du Prince-Edouard	Nouvelle-Ecosse	Nouveau-Brunswick	Québec	Ontario	Manitoba	Saskatchewan	Alberta	Colombie Britannique	Etats-Unis	Hong Kong	Indes occidentales	Bermudes	Nigeria	Europe	Porto Rico	Australie	Angleterre	Total
Dalhousie . . .	7	2	28	10	65	15	5	5	2	1	1							1		50
McGill	3	2	1	6	84		1	12		6	21			3			1			142
Montréal . . .			1		1	256	9	8			5		6			3				98
Toronto	1	4		3			3	36	55	12		1	1		1	4		4		299
Alberta										16								1		118
Total	11	8	30	21	150	271	18	51	57	35	27	1	7	3	1	8	1	5	2	707

TABLEAU 6

Etudiants supplémentaires

	Dalhousie	McGill	Montreal	Toronto	Alberta	Total
*Etudiants diplômés 1953-1954 . . .	0	0	0	16	0	16
**Etudiants post-scolaires 1953-1954 .	0	0	7	4	0	11
***Etudiants passagers 1953-1954 . .	0	0	95	3	0	98
Hygiénistes aux études durant 1953-1954	0	0	0	15	0	15

*L'expression "étudiants diplômés" signifie les dentistes inscrits à l'Université dans l'Ecole pour Diplômés et qui suivent un cours, qui donne droit à un titre.

**L'expression "étudiants post-scolaires" signifie les dentistes inscrits dans une faculté dentaire pour y suivre un cours, qui donne droit à un titre ou à un diplôme.

***L'expression "étudiants passagers" signifie les dentistes inscrits dans une faculté dentaire pour y suivre un cours de courte ou de longue durée, ne donnant pas droit à un titre ou un diplôme.

TABLEAU 7

Statistiques au sujet du nombre des étudiants canadiens aux études dans les facultés dentaires du Canada en rapport avec la population de leur province d'origine

Etudiants venant de	Pourcentage des étudiants	*Proportion des étudiants en rapport avec la population
Terre-Neuve	1.55	1/34,818
Ile-du-Prince-Edouard	1.13	1/13,250
Nouvelle-Ecosse	4.24	1/22,100
Nouveau-Brunswick	2.97	1/25,524
Québec	21.22	1/28,460
Ontario	38.33	1/18,070
Manitoba	2.54	1/44,944
Saskatchewan	7.21	1/16,882
Alberta	8.06	1/17,579
Colombie britannique	4.95	1/35,143
Canada		1/20,907

*Les chiffres des populations sont ceux fournis par le Bureau des Statistiques d'Ottawa, pour 1953.

Note: Environ 40 étudiants canadiens font leurs études aux Etats-Unis, chaque année; comme on ne peut connaître leur province d'origine, il est donc impossible de les inclure dans ce tableau.

TABLEAU 8

Nombre des demandes d'admission aux études dentaires par des candidats qualifiés

Université	1945 demandes	1946 demandes	1947 demandes	1948 demandes	1949 demandes	1950 demandes	1951 demandes	1952 demandes	1953 demandes
Alberta	26	59	27	44	50	45	37	40	45
Toronto	251	?	?	410	290	239	228	206	243
McGill	87	104	190	165	142	124	118	50	50
Montréal . . .	157	108	137	135	140	112	72	107	93
Dalhousie . . .	?	?	?	?	?	?	?	25	20

Note: Les chiffres contenus dans le tableau ne sont pas des plus précis; ils servent à indiquer les tendances d'année en année. Les facultés ont des normes différentes pour juger des demandes; par conséquent, les chiffres soumis par une faculté peuvent être appréciés différemment dans une autre faculté.

Journal

OF THE CANADIAN DENTAL ASSOCIATION

Some clinical applications of cephalometric analysis.*

by ALBERT J. COLLE, D.D.S., M.S., Montreal, Que.

EARLY STUDIES

Following the initial stimulus of Angle at the turn of the century, workers in orthodontics began to consider the relationship of the dentition to the cranium, and the postnatal growth of the head. Angle had postulated that the maxillary first molar is sufficiently stable in its relation to the cranium to serve as the starting point for the description of morphological deviations of the jaws. As a basis of classification, this proved of great value. However, it left unanswered the question of maxillary prognathism and mandibular retrusion, and their differential diagnosis, as well as other deviations.

Simon,¹ in 1926, made an intensive study of these problems. He set out to analyze the growth of the face and jaws in three planes of space, and to relate the denture to the face and cranium using anthropological landmarks. His systematic method

of study and its rationale of facio-dental orientation proved of value, even though the establishment of norms proved most difficult.

Milo Hellman, as a consequence of his comparative craniological and odontological studies, brought to the problem of human growth and development a storehouse of knowledge and understanding in biological interpretation and craniometric technique. At a time when orthodontic thinking was straight-jacketed under rigid concepts, he introduced to the field the thought of a range of normal variation. This was intended to make more elastic the standards of evaluation of deviations, particularly in the matter of tooth eruption.²

Then, by a series of anthropometric measurements, he set out to plot the growth of the face using statistical methods of analysis. He gave graphic expression to his measurements by expressing them as a modified "profile."³ These allowed him to express diagrammatically the facio-dental relationship found in nor-

*Read before the Montreal Society of Orthodontists, September 21, 1953.

mals and to compare those found in the various classes of malocclusion.

The above studies were the result of applying anthropometric methods in orthodontics. It is true that there was the possibility of error in using methods intended for measuring dry skulls in a laboratory for measurements on the skin surface of living individuals. Furthermore, the use of landmarks in the facial region offered a source of error compared to those of the cranial base region, as revealed by a standardized radiograph. However, much valuable information and methods of study useful to orthodontics were revealed by these efforts.

CEPHALOMETRIC ROENTGENOGRAPHY

The development of standardized cephalometric roentgenography was stimulated considerably by the work of Broadbent, as reported in 1934. By using standardized serial roentgenograms of growing children, he added greatly to the knowledge of growth and development. He employed a head-positioning device and two X-Ray tubes, positioned at right angles to each other and fixed at a five foot distance from the object so that lateral and anteroposterior roentgenograms may be taken. The procedure depends upon the accuracy of setting up the apparatus so that the central ray of the lateral X-Ray tube passes along the superior surface of the ear posts, meeting the mid-sagittal plane of the head of the patient and the plane of the film at right angles. It is also essential that the patient be positioned in the apparatus so that the head is not tilted. The fact that the amount of enlargement is measurable when repeated allows for comparative serial growth studies. Other cephalometric equipment has been devised by Higley⁵ and Margolis⁶, and the latter's was used for the records to be shown.

Broadbent⁷ advanced the study of growth and development considerably by choosing landmarks in the more stable cranial base area, rather than relatively unstable reference points in the facial area. Accordingly, he constructed the

Bolton-nasion plane which goes from the Bolton Point (the highest point in the profile of the notches at the posterior end of the condyles of the occipital bone), to nasion (the junction of the frontal and nasal bones in the mid-plane of the skull). A perpendicular from this plane to the centre of the sella turcica is constructed, and the mid-point designated as the registration point. Thus, lateral view roentgenograms taken of the same individual at various times may be superimposed and related to the Bolton-nasion plane and registration point for comparison. This usage of landmarks outside the face permits exact measurement of changes in the face itself in relation to these landmarks.

THE GROWTH PATTERN

One of the outstanding contributors to existing knowledge pertaining to growth of the face is Brodie⁸, who using the methods of Broadbent, divided the head into various components and studied each component as a separate entity from the third month to the age of eight years. It was found that the incremental pattern of growth in the various parts of the head, as well as the composite of the whole, was in the nature of parallelism in the geometric form of the increments. The face seemed to grow outward and forward along a straight line passing through the sella turcica, the first upper permanent molar and gnathion. It was concluded that the individual morphogenetic pattern of the skull is established early in life, and that the tendency is for the growth increments to follow a parallel relationship to the primarily established pattern.

The application of cephalometrics to clinical orthodontics was illustrated by an important contribution from the University of Illinois by Brodie, Downs, Goldstein, and Myer⁹ in 1938. This was a study of the changes brought about by orthodontic treatment. Cases belonging to the three classes of malocclusion were subject to analysis, consisting of superimposition of tracings done before and after treatment.

It was shown that orthodontic treatment had little effect on any other bony structure except the alveolar process. The nature of the tooth movement is largely tipping unless great care is taken to control it. The nature of the mandibular shifting, when it occurred, was observed to be a downward and backward rotation of the mandible more often than a horizontal antero-posterior movement. In general, it seemed to indicate that orthodontic treatment could not change the growth pattern of the individual.

For many years clinical orthodontists concentrated their attention in diagnosis and treatment on molar relationships as indicated by Angle. The status of the incisors was, in the main, overlooked, both as related to the face before treatment and secondly, as that relationship was affected by treatment. Grieve¹⁰ had commented on the unfavourable consequences of tipping the mandibular incisors forward, and, in later years, Tweed¹¹ made the uprightness of the mandibular incisors a prime concern of treatment. The interest Tweed arose in basal bone and its influence on the results of orthodontic treatment were questioned by some who sought a clearer definition of the relationship.

THE INCISOR-MANDIBULAR PLANE ANGLE

Margolis¹² had developed a technique for standardized cephalographs and applied this method of study to the problem.¹³ Tracings were made from cephalographs of Indian skulls and from X-Rays of children with malocclusion. It was found that there appeared to be a demonstrable relationship between the axial inclination of the mandibular incisors and the incisor-mandibular plane angle, the latter being constructed by joining the long axis of the mandibular central incisor with the mandibular plane.

For the vast majority of white children with good facial patterns and non-prognathous faces it seemed that the incisor-mandibular plane angle was $90^{\circ} \pm 3$. Further studies by Noyes, Rushing and

Sims¹⁴, and Speidel and Stoner¹⁵ seemed to substantiate this observation. One important dento-facial relationship had been clarified, i.e., the relation of the mandibular incisor angulation to the mandibular plane, but this in turn raised further questions. There seemed to be a need for relating the dentition to the cranium in the antero-posterior plane; for the teeth could not be upright and be forward as related to the face, or be upright and be retrusive. Further, the incisor-mandibular plane angulation depends on the extent of development of the ramus and body of the mandible, and on the gonial angle. An individual could appear to be a bi-maxillary protrusion yet have an incisor-mandibular plane angle approaching 90° . It might then be found that the gonial angle would be obtuse or the ramus deficient in height.

EVALUATION OF THE FACIAL PATTERN

A means of evaluating mandibular development was introduced by Tweed¹⁶. It was a clinical evaluation, directly on the patient, found by measuring the angle formed by the Frankfort Horizontal and mandibular plane. He found that when this angle ranged from 20° to 30° , facial development was usually good, and as that angle became larger, the facial pattern became less favourable.

This was in effect a measurement of ramus development, which can influence the facial pattern very markedly. But there was still a great need for criteria and means of evaluating the proportional developmental level of the lower third of the face, and to orient the dentition to it.

THE MAXILLOFACIAL TRIANGLE

A study to investigate the nature of the facial pattern was undertaken by Margolis¹⁷. A group of Indian skulls were selected which had good occlusion and skeletal development. Standardized cephalographs were taken of the group and tracings were made. The top of the speno-occipital suture was taken as the most stable point on the cranial base as a point of registration, since growth takes

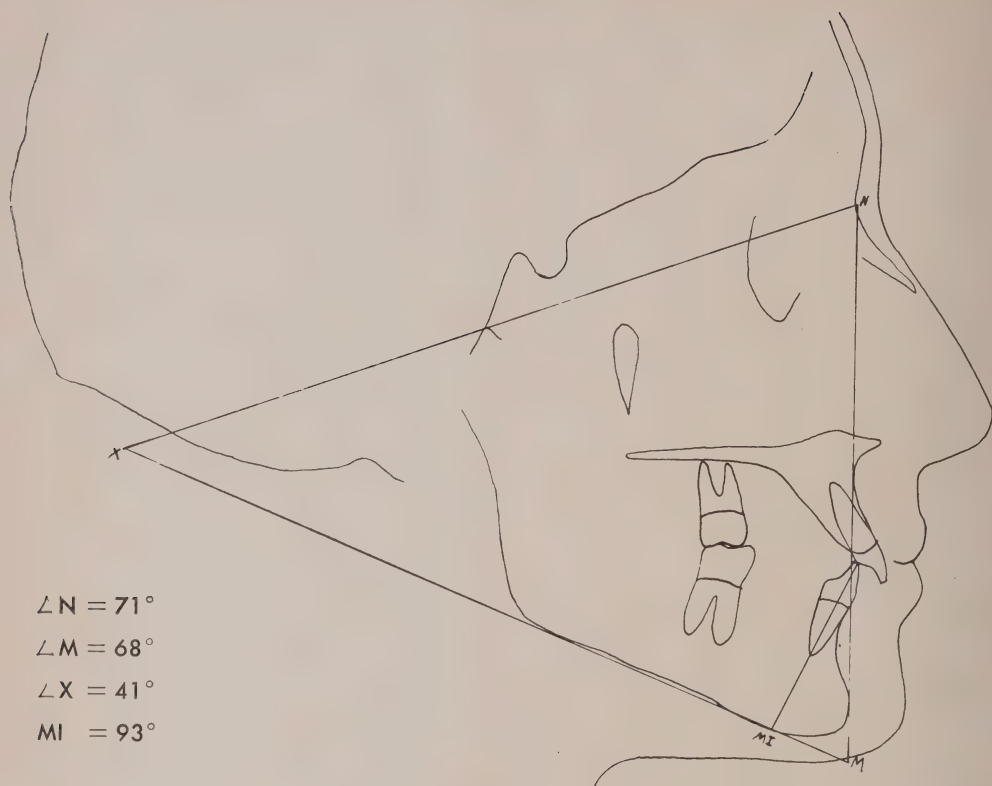


FIG. 1 Maxillofacial Triangle: Female, age 24, with normal occlusion and well balanced facial development.

place anterior and posterior to that suture. This suggested the use of the nasion-spheno-occipital base line to designate the cranial base. The mandibular plane was drawn and menton, the most anterior point tangent to the lower border of the mandible, established. The Maxillofacial Triangle was completed by joining nasion to menton, and then to the mandibular line.

This method of study was also applied to a group of one hundred children from ages six to nineteen years, who had well developed, non-prognathous faces. It was found that: 1. the angle at nasion was $72^\circ \pm 3.5^\circ$, which included 92% of the readings; 2. the angle at menton was $67.7^\circ \pm 3.5^\circ$, which included 85% of the

readings; 3. the angle at X (the junction of the mandibular plane and the cranial base line) gave a reading of $39.7^\circ \pm 3.5^\circ$, and included 81% of the readings.

Qualitative observations of significance were that the mandibular line touches the occipital bone posterior to the foramen magnum, and that the facial line intersects the lingual surface of the crown of the mandibular incisor. See figure 1. The latter may be lingual to the facial line when the mental eminence is pronounced, or the incisor inclined lingually. In instances of dento-alveolar prominence, the facial line would intersect the mandibular incisor on its root portion, and would similarly be well lingual to the maxillary incisor.

The quantitative interpretation of the angles is important. It may be stated that a smaller angle at N indicates a more receding chin, and that a large angle at X may be indicative of either a deficiency in ramus height, or a larger gonial angle, or a cranial base deficiency.

BIMAXILLARY PROGNATHISM AND DENTOALVEOLAR PROGNATHISM

Cephalometric analysis may be a valuable aid in the differential diagnosis of bimaxillary prognathism and bimaxillary dentoalveolar prognathism, as explained by Margolis in a recent publication.¹⁸ A true bimaxillary prognathism, such as is normal in the Negro or Chinese with a good occlusion and well developed face, would probably have a Maxillofacial Triangle similar to that of the nonprog-

nathous white person. The dentition, including alveolar and often supporting basal bone, however, would be related anteriorly to the facial line. The facial line would probably intersect the mandibular incisor on its root portion, while that tooth would have a marked forward axial inclination.

A bimaxillary dentoalveolar prognathism would be a type more commonly encountered in a modern white. This would have a well developed facial skeleton as indicated by the Maxillofacial Triangle, and the mandibular incisor angulation may be rather high. However, the anteroposterior relation of the dentition to the facial line is not as prominent as in the bimaxillary prognathism. In this instance, the facial line would tend to intersect the coronal portion of the man-

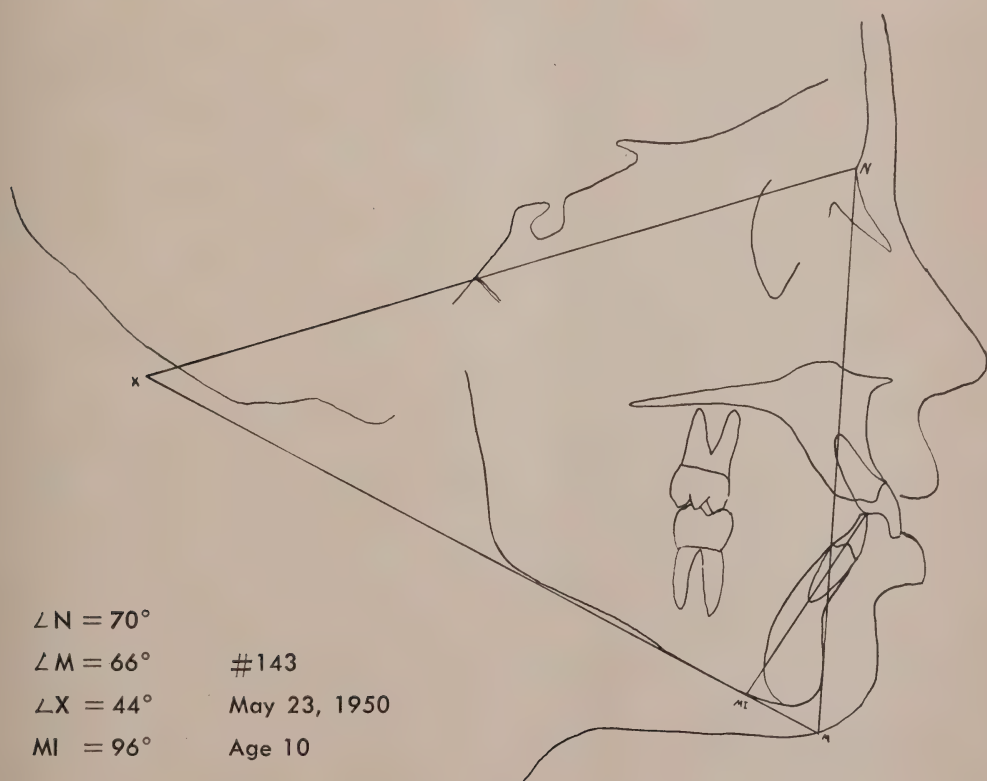


FIG. 2 Bimaxillary dentoalveolar prognathism before treatment.

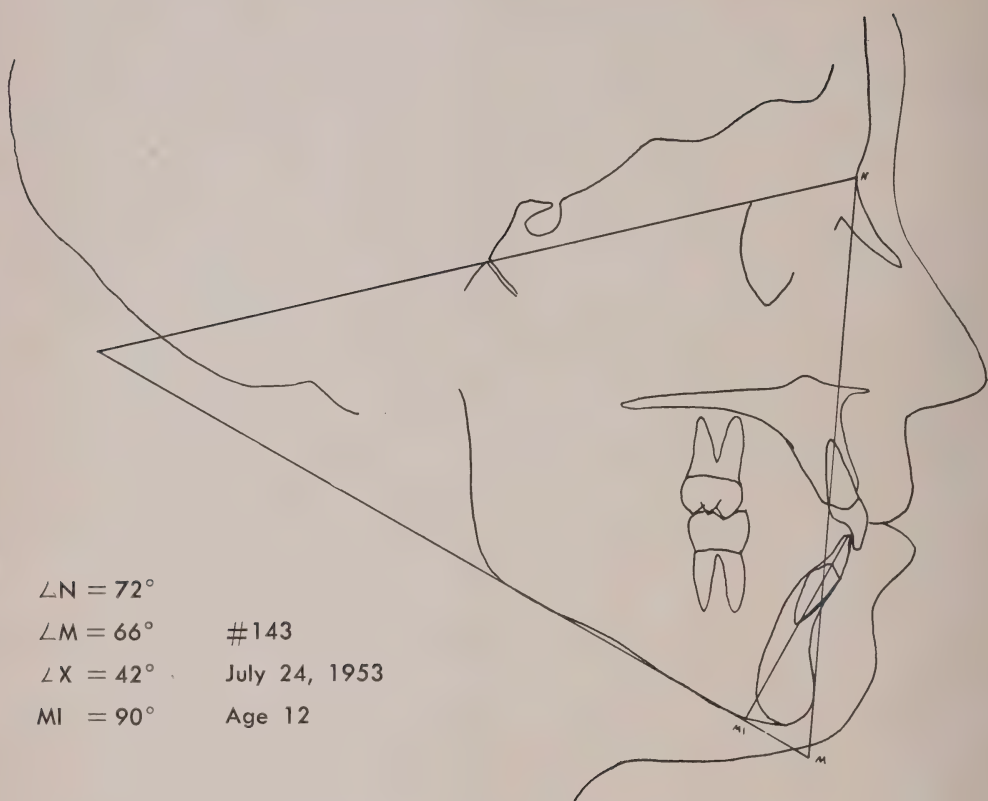


FIG. 3 Bimaxillary dentoalveolar prognathism after treatment.

dibular incisor, indicating that this dentition is not as prominent as the one previously described.

When associated with malocclusion, improvement in the facial contours may result from treatment of a bimaxillary dentoalveolar prognathism. This may call for a reduction in the number of dental units as a part of treatment, which in no way simplifies the course of orthodontic therapy. But this may, in certain cases, permit a greater degree of accomplishment as far as the result is concerned. (See figures 2 and 3.)

In a true bimaxillary prognathism, where the teeth, their supporting alveolar bone and also the basal bone of the maxilla and the mandible are involved,

the prospects from similar orthodontic treatment are much less.

With regard to Class II, Division 1 cases, many of these cases with an adequate skeleton base respond to standard treatment procedures. There are others, however, where an inadequate cranio-facial skeleton seems present and the maxillary incisors seem markedly procumbent without undue spacing. In this instance, consideration may be given in treatment to removal of the maxillary first bicuspid and retraction of the anterior segment as the most promising treatment plan.

CONCLUSION

In conclusion, it should be emphasized that there is no single criterion upon

which diagnosis may be based. Cephalometric roentgenograms may yield valuable information about the craniofacial structures of the patient presented for orthodontic diagnosis and treatment. Cephalometric analysis should be coordinated with all the other tried and true clinical criteria of evaluation, such as examination of the patient and the hard and soft tissues, study of intraoral and lateral jaw X-Rays and lateral and frontal photographs.

There are still many questions left unanswered, and much to be learned in the future. At present, however, this method of study may offer useful guides to the clinical orthodontist in determining his objectives of treatment, and in appraising after treatment the degree of accomplishment of those objectives.

BIBLIOGRAPHY

1. SIMON, P. W. *Diagnosis of dental anomalies*. (Trans. by B. E. Lischer). Boston, Stratford Co., 1926. 375 p.
2. HELLMAN, M. Changes in the human face brought about by development. *Int. Jour. Orth., O. Surg. & Radiology*, 13: 479, 1927.
3. HELLMAN, M. The face and occlusion of the teeth in man. *Int. Jour. Orth., O. Surg. & Radiology*, 13: 934, 1927.
4. BROADBENT, B. H. A new concept of dento-facial orientation. *Angle Orth.*, 1: No. 1, 1931.
5. HIGLEY, L. B. A head positioner for scientific, radiographic and photographic purposes. *Int. Jour. Orth., O. Surg. & Radiology*, 22: 699, 1936.
6. MARGOLIS, H. I. Facial dental casts and records. *Int. Jour. Orth., O. Surg. & Radiology*, 20: 875, 1934.
7. BROADBENT, B. H. The face of the normal child. *Angle Orth.*, 7: 183, 1937.
8. BRODIE, A. On the growth pattern of the human head from the third month to the eighth year of life. *Am. Jour. Anat.*, 68: 209, 1941.
9. BRODIE, A., DOWNS, W., GOLDSTEIN, A., and MEYER, E. Cephalometric appraisal of orthodontic results. *Angle Orth.*, 8: 261, 1938.
10. GRIEVE, G. W. A definite method for stimulating normal growth of the mandible. *Int. Jour. Orth., O. Surg. & Radiology*, 12: 307, 1926.
11. TWEED, C. H. Application of the principles of the edgewise arch in the treatment of malocclusion. *Angle Orth.*, 11: 5, 1941.
12. MARGOLIS, H. I. Standardized X-ray cephalographics. *Am. Jour. Orth. & O. Surg.*, 26: 725, 1940.
13. MARGOLIS, H. I. The axial inclination of the mandibular incisors. *Am. Jour. Orth. & O. Surg.*, 29: 571, 1943.
14. NOYES, H., RUSHING, C., and SIMS, H. The angle of axial inclination of human central incisor teeth. *Angle Orth.*, 13: 60, 1943.
15. SPEIDEL, T., and STONER, M. Variation of mandibular incisor axis in adult normal occlusion. *Am. Jour. Orth. & O. Surg.*, 30: 536, 1944.
16. TWEED, C. H. The Frankfort mandibular plane angle in orthodontic diagnosis, classification, treatment, planning and prognosis. *Am. Jour. Orth. & O. Surg.*, 33: 175, 1946.
17. MARGOLIS, H. I. A basic facial pattern and its application in clinical orthodontics. I: Maxillofacial Triangle. *Am. Jour. Orth. & O. Surg.*, 33: 631, 1947.
18. MARGOLIS, H. I. A basic facial pattern and its application in clinical orthodontics. II: Craniofacial skeletal analysis and dento-craniofacial orientation. *Am. Jour. Orth.*, 39: 425, 1953.

Dentistry in Relation to Internal Medicine and Preventive Medicine

by JOHN A. KOLMER, M.D., D.P.H., F.A.C.P., F.A.C.D.

Journal of Dental Medicine, January 1954.

Dental students and dentists are frequently in strategic position to first suspect or detect various systemic conditions and diseases without oral etiology or manifestations in patients unaware of their existence.

This enables them to cooperate effectively with physicians in the prevention of conditions and diseases due to focal infection; in the prevention of accidents in severe hyper-tension, coronary arteriosclerosis and hyper-thyroidism; in the prevention of excessive bleeding in jaundice and the blood dyscrasias;

in the prevention of gastrointestinal disorders by adequate prosthesis; in the prevention of psychoneuroses by adequate orthodontics, and in the control of cancer by early detection and adequate treatment of oral precancerous lesions and incipient cancers.

Examples of systemic conditions and diseases affecting the lips, teeth, gingivae, periodontium and tongue are given in the text along with possible pigmentations, blood dyscrasias and skin diseases producing oral manifestations, halitosis, xerostomia and ptyalism, including examples of systemic diseases producing abnormal size and shape of the head, swellings of the face, increased pulsations of the neck, enlargement of the thyroid gland and cervical lymphadenopathies falling within the range of observation by dentists.

*Antiques of dental interest**

by T. G. H. DRAKE, O.B.E., M.B., F.R.C.P. (C).

In the following article are pictured and described various antique articles of dental interest, practically all of British origin, from the author's collection of medical antiques. The objects described are not ones purchased under the designation "A museum specimen," frequently a tag used to justify an exorbitant price, but are such as may be obtained by the collector of moderate means. With two exceptions all specimens shown were obtained from Europe through correspondence, not by personal search. Only rarely is such material found listed for sale in antique magazines or catalogs.

Even now the average parent is apt to ascribe to "teething" most of the disturbances of health and behaviour which occur during the period of primary dentition. With how much greater foreboding this period was approached in olden days can be appreciated from contemporary mortality tables. The particulars of the final illness from which these were constructed were obtained by the lay "searchers" from the relatives of the deceased. Without, in the light of modern knowledge, questioning the correctness of the diagnoses, these tables recorded the condition which was considered the cause of death, in most cases information imparted to the parents by the attending physician.

As quoted by Hurlock (1) in 1742, "Dr. Arbuthnot (Practical Rules of Diet and C.) tells us; that above a tenth part of infants die in teething by symptoms proceeding from irritation of the tender nervous part of the jaws, occasioning inflammations, fevers, convulsions, looseness with green stools, not the worst symptom, and, in some gangrenes." Again Hurlock stated "In the year 1740 were buried of

all ages thirty thousand eight hundred and eleven; of this number there died within five years old thirteen thousand six hundred twenty-seven; whereof of convulsions, small-pox and teeth jointly made eleven thousand five hundred forty-nine."

John Robertson, a member of the Royal College of Surgeons, Edinburgh, and one of the surgeons to the Manchester Lying-in Hospital quoted (2) in 1821 figures obtained from the Rusholme Road Cemetery, Manchester, which he believed "is kept with great discrimination and accuracy and that it is on many accounts incomparably more worthy of reliance than the London mortality bills." Of 912 burials between 6 months and 2 years of age "tooth fever and teething" was recorded as the cause of death in 17.4%, being the second highest cause recorded in the 6 to 9 months period, first in the 9 to 12 months period and second in the period between 1 and 2 years. One can readily appreciate that in an era when a common proverb proclaimed "Parents could not truly rejoice in their children before they had cut their eye teeth," that remedies to avert the dreaded effects of teething were in great demand. One of the first things to which the parent probably turned was an amulet, an object worn by the infant entirely for its "magic" without any thought of medicinal virtue. An example, a teething necklace made from the vertebral column of a snake, is shown in illustration 1. In a different category are other teething necklaces whose value was supposedly medicinal being due to some effluvia emanating from them, especially when moistened by the infant's drooling. In ancient times these necklaces had been made up of the roots of henbane, peony, the wild gourd, and other vegetables.

In the late 18th and early 19th century among the dozen or so quack medical ad-

*From The Research Institute, Hospital for Sick Children, Toronto.

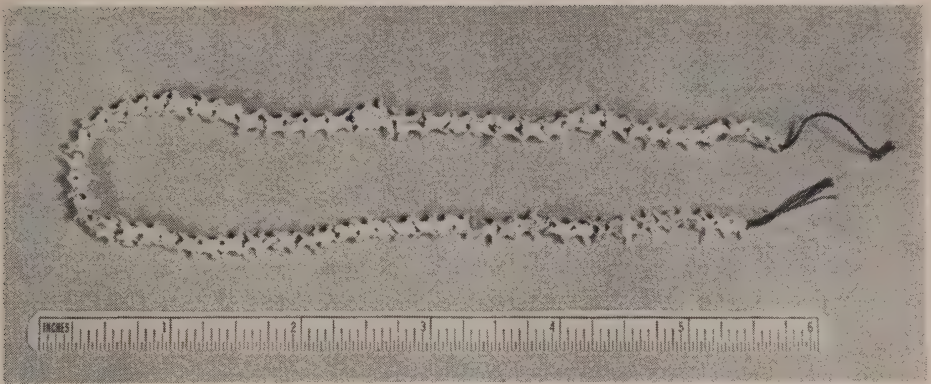


FIG. 1—Teething amulet, a snake's vertebral column necklace. German, 19th century.

vertisements for wonder working potions, appliances such as trusses, etc., appearing in each issue of the news sheets would probably be found Basil Burchell's offering of the "anodyne necklace" for children cutting teeth, one of the most widely advertised and used nostrums of the time.

A typical advertisement taken from "The Times" of 1807 proclaimed: "Children cutting teeth – at Mr. Burchell's, sole proprietor and preparer of the anodyne necklace to the King, for the Royal Children, No. 79 Long-Acre; and by his appointment at Mr. Tuft's, late Mrs. Randall's, at the Royal Exchange, and positively no where else in London are sold the true original anodyne necklace, after wearing of which but one night, children have immediately cut their teeth with safety, who, just before were on the brink of their grave with their teeth, fits, fevers, convulsions, gripes, looseness & C. all proceeding from their teeth, and have almost miraculously recovered; price 6s. Likewise the famous sugar plums for worms, in children and grown persons, in boxes 2s. 6d. and packets 1s. 1½d. each. They have only the taste of, and are as innocent and easy to take as a common sugarplum. To avoid counterfeit shops in the neighborhood, the public are desired to copy the name of Basil Burchell and to be sure to observe the following words on the outside of every

necklace;— Basil Burchell, sole proprietor and preparer of the anodyne necklace to the King, for the Royal children, or they will certainly be deceived." This "wonder working" teething necklace is described in an anonymous pamphlet of 1715, quoted by Menzies Campbell (3), as acting thusly; "The spiritous atoms which certainly flow from the necklace . . . are volatile alcalies; which being more proportioned to the pores of the teeth and gums, than any other part of a human body, being exhaled from a necklace made of a matter of the very same nature as a human tooth is; consequently have such a resemblance and proportion to each other, being similar and homogenous substances that . . . altho' these atoms wander all about the neck and head of the child, yet nevertheless enter and rest nowhere so willingly as in the pores of the gums, having a proportion not near so exact to any other part whatsoever of a human body; being as I just now said, homogenous and of the same nature."

In the 1790's, to each Burchell necklace was attached a holed advertising medal, illustration 2,A. This medal was similar in size to the various halfpenny token coins issued by many individuals due to the scarcity of regal copper coins at the time. According to Dalton and Hamer, (4) 19 die varieties, exhibiting only very small variations in the character and

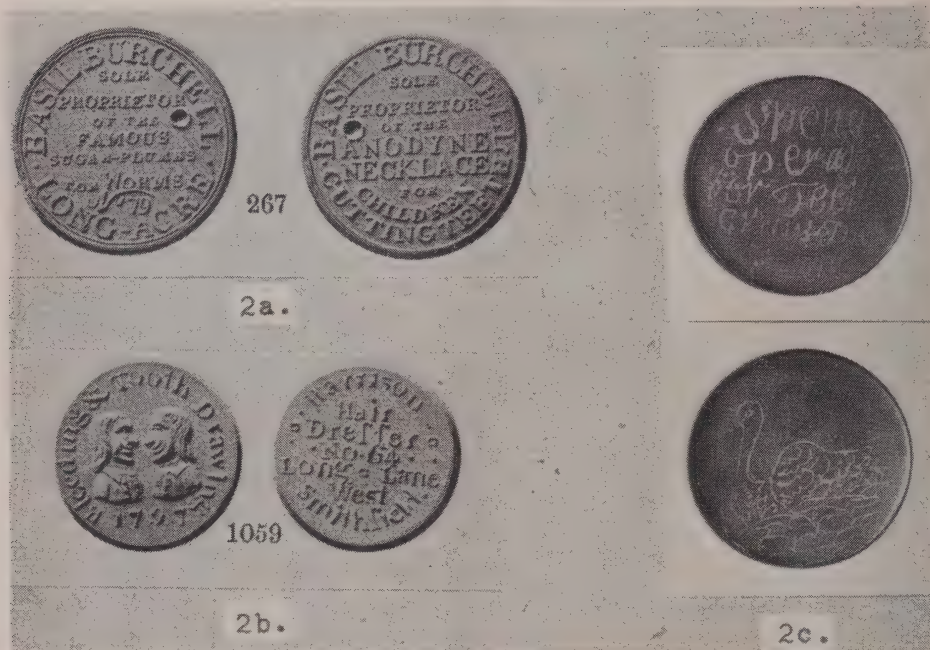


FIG. 2—A, Medal, Basil Burchell's, "anodyne necklace for children cutting teeth", ca 1790.
 B, Token coin, 1797, "O. Harrison, Hairdresser, Smithfield, Bleeding and tooth drawing".
 C, Trade card, engraved on smooth half-penny, "Spence operator of Teeth Grays Inn Lane", ca 1760.

position of the lettering and ornaments, were issued by Burchell. Some are extremely rare, others scarce. Probably due to their presentation to Burchell for redemption, these medals were finally issued with an edge stamping "This is not a coin but a medal." This particular edge reading which had an issue of about 5152 is found in 50% of our 55 duplicates of Burchell tokens, from which figures one is tempted to deduce that the total number of Burchell medals issued was in the neighborhood of 10,000.

Topical applications to the gums were also considered valuable in dentition "which frequent necessity and danger have been the parents of inventing". . . . "anointing or rubbing the gums with the finger (which action of the finger Mercurialis lays some stress upon) dipt in cream, fresh butter, honey, yolk of an

egg. Sugar alone or mixed. The brains of a hare, goat, calf, lamb or sucking pig. With the fat of fowls, or with fresh blood from a wounded cock's comb; and also a bitch's milk . . . to anoint the gums with oils of sweet almonds, lillies, cammomile, roses: and, in case of great inflammation and intense pain, with the juices of lettuce, and nightshade, as a narcotic: with other things too tedious to mention." (1; page 28).

In addition to rubbing the gums with the finger, various objects, hard or soft, were presented to the infant to bite upon in the hope of bringing about tooth eruption. While the majority preferred smooth hard objects, a few including Hurlock and Burchell preferred a softer material such as a tallow candle due to their idea that biting upon hard substances would



FIG. 3—Gum sticks, coral, chalcaedony, mother of pearl, agate and wolf's tooth, 18th and 19th centuries.

delay eruption by hardening the overlying gums.

From early days coral was a favoured material for teething sticks, being smooth, hard and ornamental. In addition the belief still persisted from Pliny's days that, "The branches of corall hanged about the neckes of infants and young children are thought to be a sufficient preservative against all witchcraft and sorcerie." Paracelsus, also, had recommended coral to be worn around the necks of children as a remedy against fits, sorcery, charms, and poisons. Coral gum sticks are found as simple sticks with a loop for suspension, illustration 3A, those bearing a whistle, illustration 3, and the most common coral and bells, illustration 4, equipped with both whistle and small bells. In addition to acting as a rattle to amuse the infant and distract it from the pain of teething, Pettigrew (5) records in 1844

that "the bells affixed to the coral top with which children used formerly to be generally arrayed have been conjectured to have been attached for the same (magical) purpose, as the ringing or rattling of them have been esteemed inimical to witches, sorcerers, etc."

In the latter half of the 19th century the production of coral sticks became uncommon, it being replaced by mother of pearl or ivory and finally the stick was largely supplanted by rings of bone, ivory, silver or plastics. Occasionally an old stick, illustration 3, is encountered bearing, as the biting surface, the tooth of a wolf or other savage animal since "Some have preferred the teeth of fierce brutes, (the wolf in particular) before other things of this kind; believing that these while retained in the mouth emit some effluvia very subtle and penetrating, by which the perforation of the gums may



FIG. 4—Teething rattles, 1786 to 1890.

happen to be promoted." (6).

Antique teething rattles equipped with coral still are obtainable rather easily, sticks without bells are much scarcer. The small gold example, illustration 4, London circa 1845, a piece of jewellery, is extremely rare.

Ambrose Parey, 1649, (7) having given particular instructions concerning several remedies to promote the breeding of teeth concluded: "But manie times it happeneth that all these and like medicines profit nothing at all, by reason of the contumacies of the gums, by hardness or the weakness of the childe's nature: therefore in such a caus, before the fore-named mortal accidents com, I would perswade the chirurgian to open the gums in such places as the teeth bunch out with a little swelling with a knife or lancet, so breaking and opening a waie for them, not-

withstanding that a little flux of blood will follow by the tension of the gums." Hurlock's book (1) published in 1742, is a dissertation upon the advantages of booth lancing though he admitted that "Among authors, tis certain, this method has not obtained a general approbation In short, this method has met with such discouragement from the scruples of many in practise, as well as among parents; that while numbers of these latter chuse rather to comply with almost any means for avoiding it; and not a few of the former, are indifferent to the use of it, but under certain conditions it will be impossible but many a child must be deprived of the timely succour of it." Hurlock, page 39, related regarding gum lancing, "It will be of little significance to enquire, whether Parey, or any other was first in the præctise of it; the expres-

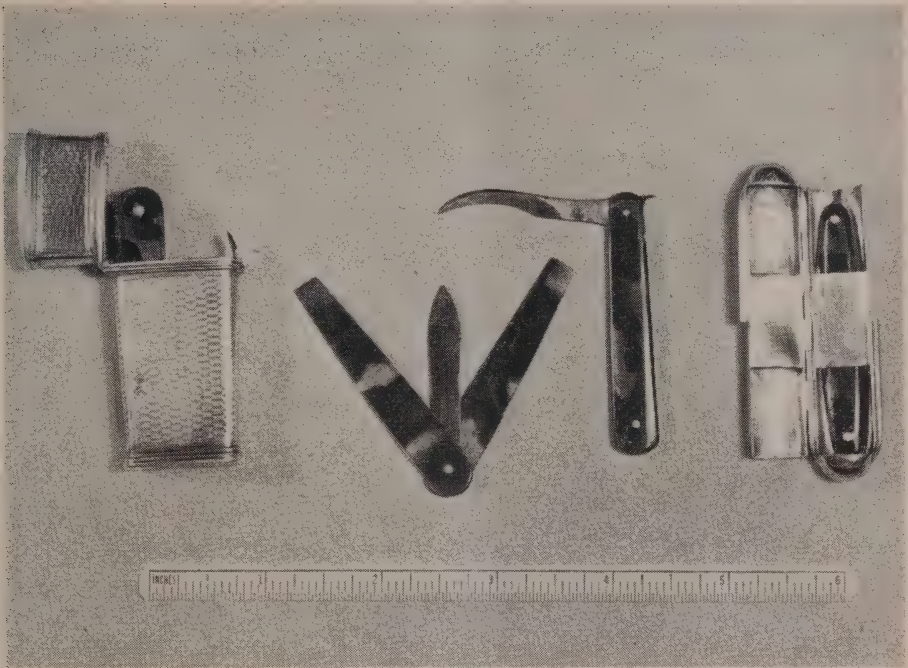


FIG. 5—A, Surgeon's Venesection lancet, 1820. B, Lancet for incising gums, 1845.

sions of our author evidently shew, that it was novel with them." In his book, replete with case histories, Hurlock proved to his own satisfaction that "when teeth are near their exit and want to be let out of the gum a free and extended opening according to the size of the teeth, not confining the same within their compass, and dividing home thereto" is a sovereign remedy for all the ill effects which he associated with dentition. He believed in early and frequent lancing. In one case over a period of $2\frac{1}{2}$ years "I opened his gums nine times, besides twice relieving them occasionally over one." In the case of his own daughter, aged 15 months "I cut her gums occasionally several times in the course of her teeth with much benefit." In another case he related that it was 3 months after the incision of the gums before any teeth came out. However, in spite of the common belief among physicians, which Hurlock pointed out, "That it was the surgeon's common

way to open children's gums, which for the most part, do well enough if let alone" gum lancing soon became a popular procedure during dentition.

The surgeon's ordinary tortoise shell handled, folding, venesection lancet, illustration 5A, was not the instrument recommended for incising the gums. As stated by Hurlock, "The surgeon needs no instruction that the lancet is not the most commodious instrument on these occasions; because, first, by reason of its double edge, it cannot be so freely used upon such children as are apt to throw out their tongue which some will do while meddling with their mouths, with an almost incessant motion of the under jaw. And again, secondly, 'tis less convenient for raking close over the double teeth, in making a clear division of the gum, for fear of snapping its point, besides the difficulty of coming at the back-teeth therewith."

Lancets suitable for gum lancing, in

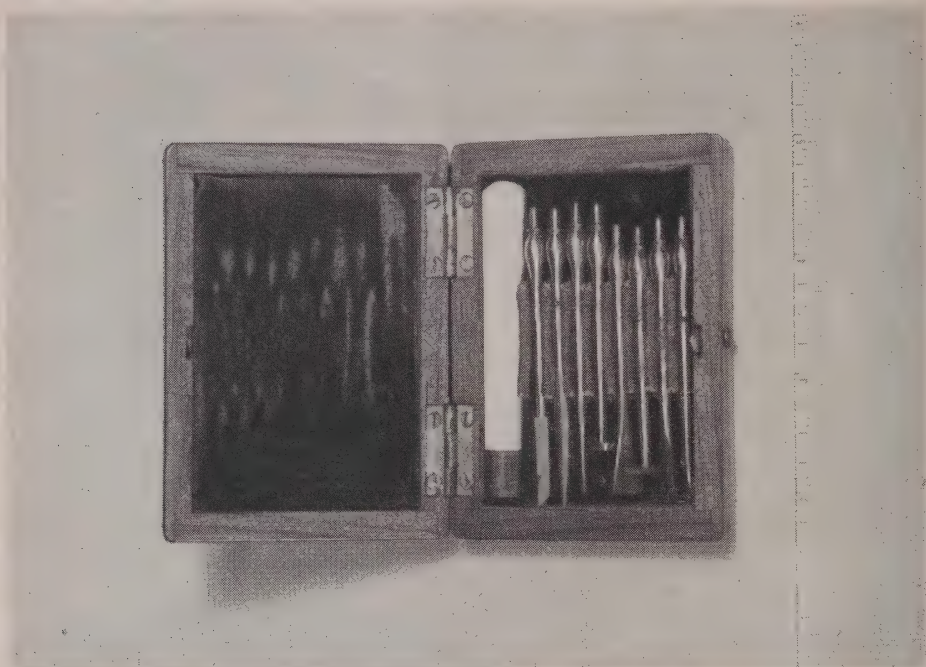


FIG. 6—Pocket dental case, early 19th century.

pocket cases, are shown in illustrations 5B and 6. In 5B, the second, unopened, double-bladed lancet in the case was used for vaccinating against smallpox, one end being a comb-like scarifier, the small blade on the opposite end bearing a longitudinal groove to hold vaccine lymph. The wood case, illustration 6, early 19th century, contains an ivory handle into which can be screwed the various steel scrapers and small bladed knives. In their day the exhibition of these gum lancets probably evoked as much clamour from the juvenile patient as does the paediatrician's immunizing needle today.

However, if incising the gums was deemed necessary a clean cut certainly would do less damage than "some nurses who taught only be the instinct of nature with their nails, and scratching, break and tear, or rent the children's gums," (7).

In the 18th century, "Though some men and women who devoted their activities solely to the teeth were laying solid foun-

dations for dental science and practice" (3), the great mass of the population received its dental treatment at the hands of the barber and the mountebank. The *modus operandi* of the quack was to set up a platform in the market square and after a crowd had been gathered through the antics of the fool and his monkey, the "high born" charlatan took over, quacked his own knowledge guaranteed to "Perform such cures as are really beyond human abilities" and warned the public against impostors. In extolling the virtues of his preparation he guaranteed to "Set your teeth as firm as a wall, make them white as ivory that were black as jet; I will also cleanse and preserve your teeth white and round as pearls, fastening them that are loose: your gums shall be kept entire, as red as coral. I will likewise administer that which shall cure the worst of breaths, providing the lungs be not totally perished and imposthumated: as also certain and infallible remedies for

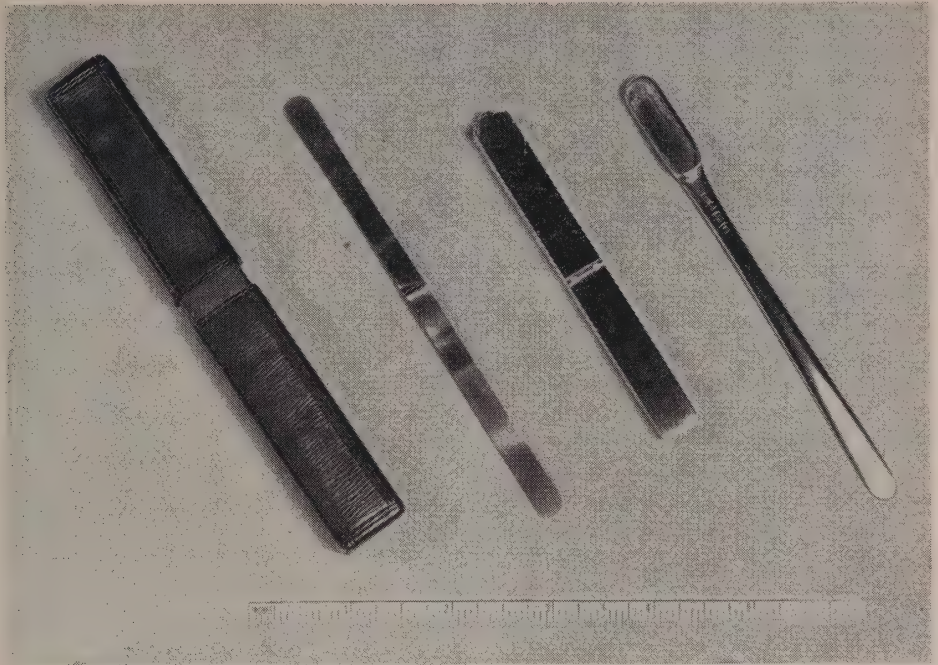


FIG. 7—Toothbrush set, 1799.

those whose breaths are yet untainted" and all this the doctor "through his bounty to the publick, is willing to let you have for the small value of six-pence." He then proceeded with his teeth breaking, the clown meanwhile distracting the attention of the crowd from the victim's cries.

In addition to word of mouth and newspaper advertising the barber-bleeder-dentist of the day attempted to recruit his clientele through the circulation of coins bearing advertisements. In illustration 2C is shown a "trade card" circa 1750 crudely engraved on a copper half penny regal coin, both faces of which had previously become worn smooth in circulation. Due to the extremely poor physical condition and scarcity of currency in the 18th century this piece undoubtedly again took its place as a circulating coin, at the same time carrying the engraver's message. Of the 5 engraved half pennies in our collection, all of extreme rarity, 3

bear the reading "Spence operator of teeth Grays Inn Lane" with, on the reverse, a crude engraving of a swan or house, or the address, while two are advertisements for "Blunt operator of teeth and bleeding Great Windmill Street near the Haymarket London." Menzies Campbell (3), states that James Spence was a skilful dentist who practised with his two sons. A professional alliance existed from 1763 to 1768 between Spence and John Hunter who attended at Spence's house three times weekly, to advise Spence's patients, the fees derived from this source being Hunter's main income at that period.

A farthing token coin of 1797, struck by O. Harrison, Hairdresser, Smithfield, bearing the intimation "Bleeding and tooth drawing" which was redeemable by him on demand, is shown in illustration 2B. An 18th century newspaper advertisement of such a barber-bleeder-dentist is reprinted by A. H. Phillips (7); "Two

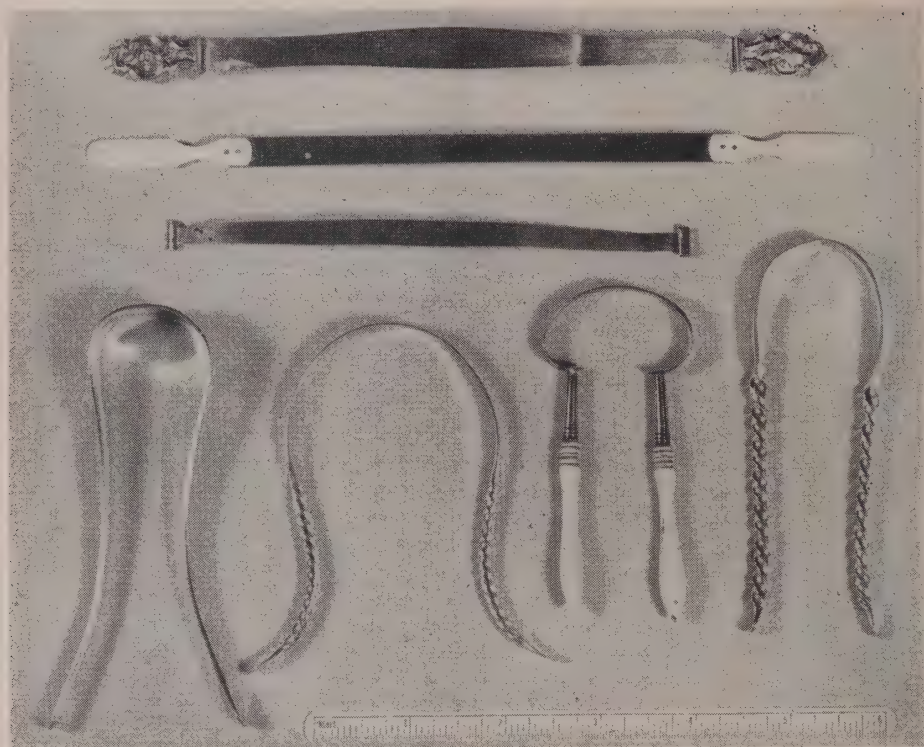


FIG. 8—Tongue scrapers, ca 1800.

men beg leave to acquaint the public in general that they keep the cleanest barber's shop in all London, where the people can have their hair cut for 2d., dressed for 3d., and be shaved for 1d. One of these men can bleed and draw teeth very well; he bleeds both in the English and German manner, as well at home as abroad, and is exceeding careful. Bleeding 3d., drawing teeth 4d. There is a parlour made in the shop on purpose for bleeding and drawing teeth. The people may depend on being served immediately and well in every respect. No satisfaction, no pay. The above-mentioned shop is at No. 7 King Street, Seven Dials."

As early as 1728, Pierre Fauchard stated that little or no care as to the cleanliness of the teeth is ordinarily the cause of all the maladies that destroy them. Fauchard cautioned that "Those who use

little brushes or morsels of cloth or linen to whiten and clean the teeth use them without knowing that all these materials are too rough and that their frequent usage practiced indiscriminately destroys the gums and the teeth."

However, in spite of Fauchard's advocating the use of a small fine sponge or softened marshmallow root the use of little brushes continued. In illustration 7 is shown a tooth brush set, sterling silver, manufactured in London in 1799. The insert in the brush socket, holding the bristles, was fashioned from ivory or wood. The purpose of the thin flexible spatula contained in the above set was at first a mystery to the author. Only after attempting to use it for extracting powder from the dentrifice box was its true identity, a tongue scraper, ascertained. In illustration 8 are shown other tongue



FIG. 9—Tooth pick cases, ca 1800.

scrapers of brass, whalebone, steel and silver. The majority of Georgian tongue scrapers which have survived are silver, similar in shape to sugar-tongs but lacking the spoon-like ends. In those hard drinking days it is probable that scraping the fur from the tongue was considered a necessary part of the toilette.

As early as 1542 Joannes Arculanus discussed the use of tooth picks. "The teeth must be cleaned, at once, after every meal from the particles of food left in them; and for this purpose must be used thin pieces of wood somewhat broad at the ends, but not sharp pointed or edges, and preference should be given to small cypress twigs, to the wood of aloes, of pine, rosemary, of juniper, of juniper and similar sorts of wood."

In the later 18th century small boxes containing one or more non-discardable tooth picks became fashionable. From

their attractive appearance and size these cases were meant to be carried on the person and their contents used in public. As shown in illustration 9 these tooth pick cases are small hinged velvet lined flat boxes usually about 3 inches long, 1 inch wide and $\frac{1}{4}$ inch deep, the full inner side of the lid being covered by a mirror. From the character of the decoration most specimens can be ascribed to the period 1790 to 1840. In the 35 specimens in our collection the materials from which they were constructed, in descending order of frequency, are ivory, tortoise shell, silver, mother of pearl, rose wood, ebony and shagreen.

Many of the tortoise shell specimens bear intricate inlays of gold wire, a form of decoration very much esteemed in the late 18th century under the name of pique work. Others bear plaques of semi precious stones, enamel, cameos, plaits of

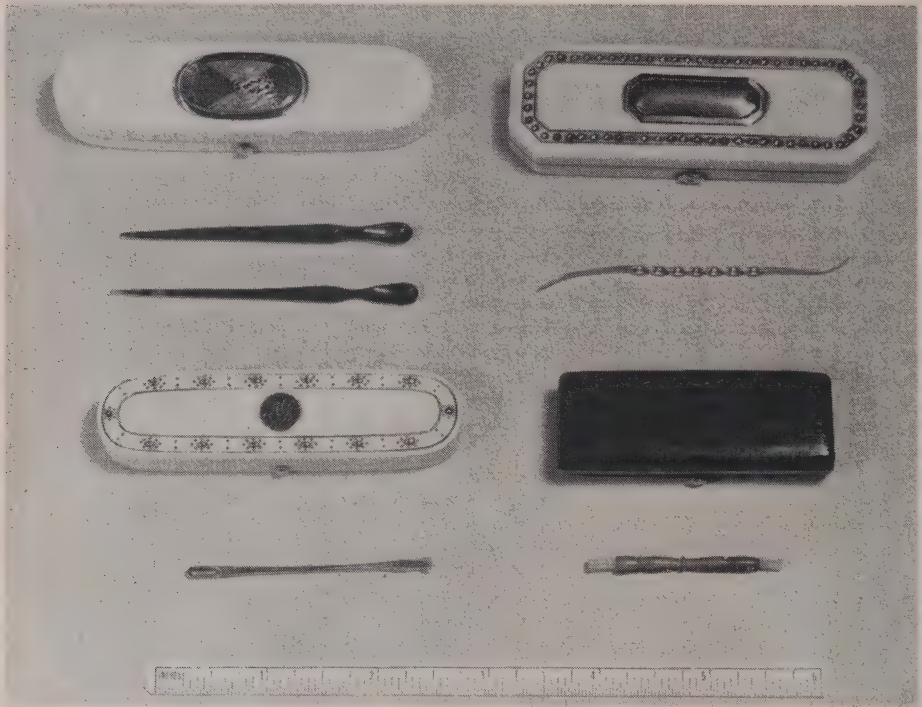


FIG. 10—Tooth pick cases and contents, ca 1800.

human hair, etc. Only 4 of our specimens retain any of the original contents, illustration 10. In A are present 2 small tortoise shell combined tooth picks and ear spuds, B contains a gold combined tooth pick and an ear spud, C contains a gold double-ended tooth pick and in D is found a small double-ended bristle brush. Antique tooth pick cases while not too difficult to obtain in the past are becoming much scarcer since they are being bought up by the tourists for use as eye mascara containers. In the late 19th century the case with removable pick was gradually replaced by gold or silver small pencil-like containers with a retractable metal blade. This again was a piece of personal jewellery usually being looped for suspension on the person. The use of this type of tooth pick carried on into the 20th century.

As stated by Dr. Laignel-Lavastine,

"Medical caricatures show us medicine, its evolution, its discoveries and its failures from the standpoint of the patient, medicine as seen by the sick." Caricatures enjoyed their greatest popularity around 1800, the period of Rowlandson, Gillray and the Cruickshanks. Entire shops were devoted to the sale of the luridly hand coloured engravings by and after these artists. The emissions picture, in an exaggerated fashion, the habits and peculiarities of all classes from royalty to the chimney sweep. They were the ancestors of today's newspaper coloured comic section, even a legend is found, "Folios of caricatures lent out for the evening." Medical caricatures are fairly common, those relating to dental matters are very rare. Of Rowlandson's 1300 prints approximately 47 are of medical interest while only 3 relate to dentistry. In illustration 11 is shown Rowlandson's



FIG. 11—Dental caricature, 1811.

"A French dentist showing a specimen of his artificial teeth and false palates," published in 1811 by Thos. Tegg, "Price 1 shilling." "Mineral teeth. Monsieur De Charmant from Paris engages to affix from one tooth to a whole set without pain. Mons. D. can also affix an artificial palate or a glass eye in a manner peculiar to himself. He also distills." This caricature referred to the English patent granted to the French Surgeon Dentist de Chèmant in 1791 for his invention of a composition for the manufacture of porcelain teeth.

As stated in an advertisement for "The Concise Encyclopaedia of Antiques," appearing in "The Connoisseur," October 1953, "Every generation produces its own vintage of collectors. Today the era of great individual collectors has largely vanished and a host of smaller collectors, chiefly in England, the Dominions and America, has taken precedence." For the "small" collector of today, especially if he

be of the Dental profession or associated with it, the acquisition and study of antiques of Dental interest is certain to prove a field not, as yet, overcrowded, in which not only knowledge of the events leading up to the present day dental achievements but also much pleasure can be obtained.

REFERENCES

- (1) Hurlock, Joseph, surgeon. A practical treatise upon dentition or, the breeding of teeth in children, London, 1742.
- (2) Robertson, John. Observations on the mortality and physical management of children, London, Longman, Rees, Orme, Brown and Green, 1827.
- (3) Menzies Campbell, J. D.D.S. 18th century dentistry. Dental Magazine and Oral Topics, April, 1951.
- (4) Dalton, R. and Hamer, S. H. The provincial token-coinage of the 18th century, 1913.
- (5) Pettigrew, T. J. On superstitions connected with the history and practice of medicine and surgery, London, 1844.
- (6) Mauriceau, Francis. The diseases of women with child. Hugh Chamberlen, Trans., 7th edition, London, 1736, p.343.
- (7) Farey, Ambrose. The workes of that famous chirurgeon Ambrose Parey, Tho. Johnson translation, London, 1649, p.647.
- (8) Phillips, A. H. A Georgian scrap book, London, 1949, T. Werner Laurie, p.44.

Suggestions for guidance of dentists establishing identity of disaster victims

By Dr. TED P. BRADLEY and Dr. L. W. MILLER,
Moose Jaw.

When it became evident that there would be some difficulty in identifying some of the victims of the recent air disaster over Moose Jaw, the authors were called upon to render assistance.

The first identifications were initiated at the request of the next of kin who had the victim's dentist telephone to give a detailed dental description of the victim. A chart was made of this information and by examining those unidentified the identity was established and the bodies released.

T.C.A. officials then asked the authors to help by making dental examinations of the victims. At the same time the Red Cross sent Dr. T. C. Brown from Toronto to organize an identification team. This team consisted of Dr. Maurice Ernest, the pathologist, the authors and the local police. The dental conditions of the remaining bodies were then charted. The Red Cross then obtained as much information as possible from relatives and dentists of those involved in the disaster, and when this information was compared with the findings from the oral examination of the bodies, identification was established.

Positive dental identification was established on seven of the bodies, while only suggestive identification was arrived at on the other four. However, all eleven bodies were tentatively identified by dental evidence and these all proved correct when other information became available.

In two instances only one lower molar remained in the body but this information was valuable in that it excluded the possibility of it being someone who was known to have been edentulous in that area.

Gold restorations and dentures were of

particular value since even the next of kin could often give a reasonably accurate description of them, so therefore a tentative identification could be made and later confirmed by the victim's dentist.

Undoubtedly positive identification would have been very difficult if not impossible in many cases without dental evidence. This was particularly true in those bodies which were very severely burned.

A body is not identified by one line of evidence alone, but by several types of which dental evidence is the most conclusive.

The following points are listed as suggestions for the guidance of dentists establishing identity of disaster victims:

1. Have the Red Cross, or other organization, get an accurate dental description of the victims at once. There may be more than one dentist to contact. These records should include
 - (a) Exact location of restoration — e.g. M.O. Amalgam Upper Left First Molar
 - (b) Any gold restorations—inlays, bridges, etc.
 - (c) Dentures — full or partial — complete description as to materials. In the case of partials—type, teeth replaced, teeth clasped, kind of clasps
 - (d) All extracted teeth and edentulous areas
2. Use the name system for location. Ask the victim's dentist to name the tooth and quadrant and not to use numbers—numbers lead to confusion, since some charts are numbered differently than others.
3. If accurate information is not available, a general lay description may be of value—e.g. had gold teeth, crooked anteriors, gold fillings, dentures, protruding teeth, etc.
4. All information should be charted with

the victim's name, sex and age and kept in the central office.

5. In the meantime, a team of dentists should examine all bodies likely to be difficult to identify.

(a) Number each chart to correspond to the body—note sex and apparent age if possible (pathologists can usually supply this).

(b) Chart each mouth completely for:

Restorations—kind and location

Edentulous areas

Teeth or jaw segments missing due to accident

Dentures—material

Partial dentures — extent and abutment teeth, type and material

Evidence of partial dentures

Gold restorations (of particular value)

Recent extractions

(c) Note and chart any dental irregularities, e.g.:

Crowded anteriors

Lapped or torqued teeth

Periodontal condition, if significant

Any retained deciduous teeth in adults

(d) Caution must be used in noting silicate or plastic fillings, both in the interproximal and gingival areas since these are easily missed.

(e) Instrument kit should include a

good flashlight, scalpel, probe, mouth mirror, pry for opening jaws, and rubber gloves.

(f) Chart in pencil and recheck each body so errors can be corrected.

GENERAL

After completion of P.M. Examination, the charts should be returned to central office for matching with charts made up from information gathered from victim's own dentist.

Even scanty information is valuable. For example—perhaps only one tooth remains in the mouth, this would preclude the possibility of a full denture on that arch and may be of value in a negative way, by proving that the body was not someone who was known to have a complete denture in that area.

The arch type charts are superior to the linear type for this work.

Recheck bodies if in doubt, or request recheck of dental history.

Do not expect all restorations on body to be on history chart, but question all restorations on history chart which are not found on body.

All dental materials found near the body should be handed in to the investigating team.

DR. MENDEL NEVIN FELLOWSHIP IN DENTAL ANAESTHESIOLOGY

Through the generosity of the Novocol Chemical Manufacturing Company and the co-operation of the University of Toronto Associates in New York, the Faculty of Dentistry, University of Toronto, is offering a Fellowship in Dental Anaesthesiology. The Fellowship, tenable at the University of Pittsburgh, is of two years' duration for the study of both local and general anaesthesia leading to a Master of Science degree.

If the applicant chosen is single, the value of the Fellowship will be \$1,500.00 per year plus tuition, but if the successful applicant is married, the Fellowship will be augmented to \$3,000.00 plus tuition by THE UNIVERSITY OF TORONTO ASSOCIATES in New York.

The successful candidate will receive free room, board and laundry on the basis customarily extended to hospital interns and must undertake to return to Toronto to practise and disseminate his knowledge of dental anaesthesiology.

Address all applications or requests for information to the Dean, Faculty of Dentistry, 230 College Street, Toronto, Ontario.

ABSTRACTS

The role of the dentist in the detection and diagnosis of oral malignancies

by WILLIAM R. PATTERSON, D.D.S., Texarkana, Arkansas-Texas.

Journal of the American Dental Association, April, 1954.

The dentist has a distinct obligation to use every scientific means at his disposal in the detection and diagnosis of oral tumors. The necessary knowledge and the techniques of securing biopsy specimens and associated clinical data must, therefore, be considered an integral part of his professional responsibilities in meeting the challenge of neoplastic disease.

Anaesthesia. Procaine or one of the procaine derivatives, as routinely used in dentistry, is the anaesthetic of choice. The injection should not be made directly into the lesion but peripherally to reduce the possibility of cellular distortion.

Surgical Technique. A sharp scalpel where it is possible delivers the specimen in its most undistorted form. When the lesion is small and superficially located, removal by total excision is recommended. The operator must be careful to include a definite zone of normal tissue along the border of the lesion. The mass should be removed without being crushed; then it should be rinsed and placed immediately in the fixative.

If because of the size or the location of the lesion complete removal is not possible, a specimen should be incised from the lesion. A triangular incision should be made at the edge of the lesion to include a portion of the normal tissue. The

apex of the incision should extend below the deepest part of the affected region.

A nonserrated tissue forceps is used to grasp the specimen and to free it gently from its base. The specimen is then rinsed momentarily in cold tap water and immediately deposited in the fixative.

Fixative. Ten per cent Formalin is the fixative of choice, and the specimen bottle should be of wide-mouth design. Sufficient fixative should be used to equal at least ten times the volume of the tissue to be examined.

In summarizing the following points are essential:

1. Careful examination of the entire oral cavity must be a routine procedure for the general practitioner.
2. Suspicious lesions should be evaluated thoroughly and a tissue specimen secured if a favourable response is not obtained after conservative treatment.
3. The biopsy should be planned to insure that a sufficient and representative specimen is obtained.
4. Small lesions should be totally excised.
5. Pertinent history and a careful clinical evaluation of the lesion to be examined should be submitted to the pathologist.
6. The specimen should be placed in an adequate amount of fixative immediately on removal.
7. Repeated biopsies are necessary if progression or recurrence of a lesion is suspected.
8. When the diagnosis of cancer has been confirmed, immediate referral to a competent medical practitioner must be made. It should be ascertained whether the patient reported for consultation.

Measurement of Gingivitis among School-Age Children in Brantford, Sarnia, and Stratford, using the P-M-A Index.

by H. K. BROWN, D.D.S., D.D.P.H., F. A. KOHLI, D.D.S., D.D.P.H., J. B. MacDONALD, D.D.S., M.S., Ph.D., and HUGH R. McLAREN, D.D.S., D.D.P.H.

Canadian Journal of Public Health, March 1954.

This study was undertaken primarily to determine the usefulness of the P-M-A index, proposed by Schour and Massler, in obtaining information on the nature and extent of gingivitis in large groups of Canadian school-age children.

In this method, the gingiva is divided into three distinct units: the papillary gingiva (P), the marginal gingiva (M), and the attached gingiva (A), according to Orban's description of gingival characteristics. Use of the P-M-A index is based upon the observations of Schour, Massler and Chopra that gingival inflammation almost invariably begins in the interdental papilla, spreading into the marginal, and, ultimately, to the attached gingiva as the severity of inflammation increases. By observing and counting the numbers of affected papillary, marginal and attached gingival units, in that order, quantitative measurement of the extent of gingivitis is possible. In addition, this method of measurement should permit the evaluation of "mild", "moderate", and "severe" cases in more precise, objective terms.

The prevalence of gingivitis in the children examined in Brantford, Sarnia, and Stratford appears to be on the order of that reported in studies of children of similar age in various parts of the world.

The findings of this study reveal the existence of an inverse correlation between the prevalence of gingivitis and oral-hygiene status. The results of the chi square test show this relationship to be significant in all three population groups under study. The variation in the the proportions of children affected in

Brantford, Sarnia, and Stratford is a reflection of oral-hygiene status in the three cities.

These three cities furnish the study samples in a study of water fluoridation. Stratford water contains fluorides naturally at a level of 1.3 parts per million. Fluoride has been added to the Brantford water for a period of approximately eight years to obtain a concentration of between 1.0 and 1.2 parts per million. Sarnia's water is fluoride-free. There appears not to be a significant relationship between the presence of fluoride in the water supply and the occurrence of gingivitis. Gingivitis prevalence and severity were found to be equivalent in Brantford, where the water is fluoridated, and in Sarnia, where the water is fluoride-free. One might speculate that the high incidence of gingivitis in Stratford children reflects a public carelessness in respect to oral hygiene, attributable to low caries rates of long standing.

In summarizing, this study was undertaken to test the usefulness and validity of the P-M-A Index method in the quantitative evaluation of gingivitis.

The percentage of children affected by gingivitis increased with age in all three groups of children studied. There was no significant relationship between age and the prevalence of gingivitis in any of the three groups of children.

As determined by the P-M-A Index, the severity of gingivitis appeared to increase as age increased. This was found to be not statistically significant.

No significant differences, in either the numbers affected or in the proportions of various categories of severity of gingivitis, were found to exist between boys and girls in any of the three groups studied.

Gingivitis experience was found to be similar, both in prevalence and in severity, among children examined in Brantford, and in Sarnia. Among Stratford children, the percentage of children affected, and the severity of gingivitis as determined by the average P-M-A count,

were greater than among the children in Brantford and in Sarnia.

An inverse correlation, which is statistically significant, was demonstrated between gingivitis and oral hygiene status among children examined in each of the three cities studied.

The findings of this study do not support, statistically, the validity of examining only the anterior gingival segments of

the mouth in order to assess entire gingivitis experience.

The value of the P-M-A Index in the quantitative measurement of gingivitis prevalence according to the degree of severity of inflammation is questionable. It would appear, also, that the gingival unit, rather than its parts (P-M-A) would be the more satisfactory basis for measurement of the prevalence of gingivitis.

The Influence of Injury to the Periodontal Membrane on the Spread of Gingival Inflammation.

by LUZ C. MACAPANPAN and JOSEPH P. WEINMANN, College of Dentistry, University of Illinois.

Journal of Dental Research, April 1954.

The progress of gingivitis of local origin into the periodontal membrane damaged during tooth movement was studied in serial histologic sections of the molar teeth and supporting tissues of thirty-five male young adult rats of the Sprague-Dawley strain. Tooth movement was induced by the insertion of a piece of rubber dam between the upper right first and second molars. The rubber dam acted also as a foreign body and caused papillary (interdental) gingivitis, characterized by massive leukocytic infiltration that later spread into the deeper supporting tissues, thus producing a periodontitis. The rubber dam was allowed to remain in place from one to seventy-two hours.

The histologic findings were:

1. In the first twelve hours, compression of the gingival papilla and mild inflammation immediately beneath the gingival epithelium were observed. In a few cases, the inflammation extended into the deep layers of the connective tissue close to the alveolar crest.

2. Between twenty-four and seventy-two

hours, the gingivitis increased in severity and progressed into periodontitis. The inflammation spread directly into the periodontal membrane injured by tension on both sides of the interdental septum between the first and second molars. However, the inflammatory cells infiltrated deeper into the more severely damaged periodontal membrane of the first molar. Inflammation also extended mesially into the lingual margin and attached gingiva, reaching the septum between the distolingual and intermediolingual roots of the first molar. From here it spread into the periodontal membrane of the intermediolingual root. On the corresponding buccal side, however, the inflammation remained confined to the papilla, and the periodontal membrane of the intermedio buccal root remained free of inflammatory cells.

We may therefore conclude from the above that:

1. Trauma causes damage to the periodontal membrane on both pressure and tension sides,

2. Damage to the periodontal membrane on the tension side diminishes the resistance of the normal periodontal membrane to direct infiltration from a gingival inflammation leading to periodontitis.

3. The findings in this experiment support the view that traumatism of the periodontal membrane will not, by itself, cause periodontitis.

RESEARCH

FOREFRONT OF CANADIAN DENTISTRY

*The Production of Fusospirochetal Infections in Guinea Pigs with Re-combined Pure Cultures**

by J. B. MacDONALD, R. M. SUTTON and M. L. KNOLL (Division of Dental Research, Faculty of Dentistry, University of Toronto).

*Journal Infectious Disease (in Press)

Nine attempts were made to recombine 16 distinct bacterial strains and a culture of spirochetes isolated from an experimental guinea pig fusospirochetal exudate. Each pure culture was inoculated in turn on to an enriched blood agar plate as a single streak *from the edge of the plate into a drop of broth in the centre of the plate*. Each streak ultimately appeared as the spoke of a wheel with the central drop in which all cultures were merged forming the hub. Spirochetes were inoculated into the central drop without being streaked. Growth in 3 of

the 9 trials was considered satisfactory. All strains grew along the whole length of the streak in 2 instances and all but one in a third. Spirochetes grew in all three. In these 3 trials the mixed growth in the central drop was subcultured once as unstreaked drops and the resultant growth in each trial was emulsified and inoculated into 4 guinea pigs. Mixed growth of unpurified exudate inoculated into 4 guinea pigs served as controls. Exudate from appropriate lesions was aspirated and passed to fresh guinea pigs—a procedure repeated through 5 passages. Lesions developed in every guinea pig in all five passages and in all 3 experimental groups. The lesions were in every respect characteristic of experimental fusospirochetal infections in guinea pigs. They included localized abscesses and spreading infections with abundant typical exudate and extensive necrosis. Comparable lesions were found in the control series.

Autoradiographic visualization of in vitro exchange in teeth, bones and other tissues, under various conditions

by L. F. BELANGER

Journal of Dental Research, 32:168-176, 1953.

1. Autoradiograms of in vitro exchanged P32 Ca45 and S35 in teeth and bones have been obtained.

2. Exchange behavior of young bones and teeth in vitro are comparable to the early autoradiographic patterns after injections of P32 or Ca45 in vivo.

3. Young normal tissues exchange at a greater rate than older tissues.

4. Areas of new growth in a bone tumor and around a bone graft exchange more than normal bone.

5. Recent calcified lesions of hyaline

cartilage and muscular arteries exchange at a higher rate than older lesions.

6. In adult human teeth, cementum exchanges more than dentine. Dentine exchanges more than enamel.

7. In the enamel of certain adult human teeth, cap-like regions proximal to the dentino-enamel junction exchange heavily but show no difference in radiopacity.

8. Following hyaluronidase incubation,

there is a progressive increase in exchange over dentine.

9. The process of dentinal caries is accompanied by progressively increased exchange in the dentine of the diseased tooth.

10. P32, Ca45 and S35 exchange at a great rate in the vicinity of carious lesions.

Autoradiographic visualization with Ca45 of normal growth of the incisor of pig and the effect of fluorine feeding

by L. F. BELANGER, W. E. LOTZ, W. J. VISEK and C. L. COMAR.

American Association of Anatomists, 66th Meeting, Columbus, 1953, Anat. Rec. 115, 281.

Three groups of Hampshire pigs (6 pigs in each group) of approximately 90 lbs. were injected with a single dose of Ca45 ($\frac{1}{2}$ mc. per 100 lbs.), then 2 pigs of each group were sacrificed at intervals of 1, 10 and 45 days thereafter. Group A was fed normally. Groups B and C received 200 and 1000 parts per million of sodium fluoride for 30 days before the administration of tracer calcium and thereafter until they were sacrificed. The autoradiograms

of normal teeth show radiocalcium in form of a definite thin band initially at the pulp border and progressively displaced towards the outer limit of dentine. The rate of displacement is greater towards the root. In the cementum, a line of lesser "intensity", is first seen at the outer surface of the root; it moves inwards towards dentine and disappears. Animals fed 200 p.p.m. fluorine, did not show any great variation from this pattern. Animals fed 1000 p.p.m. have shown a marked slowing down of the rate of migration of the tracer Ca in dentine, cementum and the adjoining alveolar bone. There is a great change in the appearance of the newly formed dentine tissue and in the autoradiographic band over dentine, which is thick and irregular. In all animals, there has been no appreciable intake of Ca45 by the erupted enamel.

Reserve alkalinity is more closely and consistently related to caries experience than is either titratable acidity or pH. It would appear that the saliva of persons free from dental decay has a high potentially basic conjugate or an enzyme system capable of yielding this effect.

When groups were divided on the basis of gradually increasing extent of caries, there was too much overlap to make these tests conclusive in terms of diagnosis and prognosis for the individual child. But studies are definitive enough to direct our thoughts to a discriminative study designed to determine the various sources of basic conjugates in the saliva.

Naomi C. Turner, Ed.M., James H. Scribner, D.D.S., and Jack T. Bell, D.D.S.

Journal of Dental Research, February 1954.

JOINT MEETING

THE CANADIAN DENTAL ASSOCIATION THE NEW BRUNSWICK DENTAL SOCIETY

St. Andrews-by-the-Sea

September 5th, 6th, 7th and 8th, 1954

Programme

(Subject to changes)

SUNDAY, SEPTEMBER 5th

- 2.00-5.00 p.m. —Registration.
9.00 p.m. —Evening Musicale, featuring
Choral Singers and Artists.
Classical and Semi-Classical
Musical numbers.

MONDAY, SEPTEMBER 6th

- 9.00 a.m. —Registration.
10.00 a.m. - 12.00 —Commercial Exhibits.
10.00 a.m. - 12.00 —Table Clinicians.
12.30 p.m. —Luncheon.
2.15 p.m. - 3.15 —The George Grieve Memorial
Lecture, **Leuman Maurice
Waugh, D.D.S.**, formerly
Director Orthodontic Clinic,
Columbia University.
3.30 p.m. - 4.30 —1. **Philip Williams, D.M.D.**,
Assistant Professor Crown
and Bridge, Tufts College
Dental School, Boston.
Subject: **New Developments
in Crowns and Bridges.**
2. **M. G. Boyes, D.D.S.**, Uni-
versity of Toronto.
Subject: **Dentistry for
Children.**
4.45 p.m. - 5.45 —**K. L. Longeway, Commander
(D.C.) U.S. Navy.**
Subject: **Operative Dentistry.**
5.45 p.m. - 6.45 —Commercial Exhibits.
7.00 p.m. —Dinner and Annual C.D.A.
Meeting.
10.00 p.m. —Chuck Wagon Dance at the
Casino.

TUESDAY, SEPTEMBER 7th

- 9.30 a.m. - 10.30 —**A. H. Crowson, D.D.S.**, Ot-
tawa, Ontario.
Subject: **Immediate Dentures.**

- 10.45 a.m. - 11.45 —**J. J. McCarthy, D.D.S.**, McGill
University, Montreal, P.Q.
Subject: **Oral Surgery.**
12.30 p.m. —Luncheon.
2.15 p.m. - 3.15 —**D. W. Gullett, D.D.S.**,
F.A.C.D., Secretary, Canadian
Dental Association.
Subject: **An Economic Survey
of Canadian Dentistry.**
3.30 p.m. - 4.30 —1. **John H. Barr, D.M.D.**, Pro-
fessor of Oral Diagnosis and
Roentgenology, Tufts Col-
lege Dental School, Boston.
Subject: **An Effective and
Practical Roentgenographic
Technique.**
2. **Francis P. McCarthy, M.D.**,
Professor of Oral Medicine,
Tufts College Dental School,
Boston.
Subject: **A Clinical and
Pathological Review of 5000
Cases.**
4.30 p.m. - 6.00 —Commercial Exhibits.
7.00 p.m. —President's Dinner and Dance.
Guest Speaker, **Lt.-Gov. D. L.
MacLaren.**

WEDNESDAY, SEPTEMBER 8th

- 9.30 a.m. - 10.30 —**Major H. W. Hart, R.C.D.C.**,
Ottawa.
Subject: **Full Denture Tech-
nique.**
10.45 a.m. - 11.45 —**J. S. Bagnall, D.D.S., F.I.C.D.**,
F.D.S.R.C.S., Dalhousie Uni-
versity, Halifax.
Subject: **Experience in the
Dental Teaching Profession.**
12.30 p.m. —Luncheon — Presentation of
Golf Prizes, etc.
2.15 p.m. - 3.15 —**S. Holmes, D.D.S.**, **Comman-
der (D.C.) U.S. Navy.**
Subject: **Incipient Periodontal
Disease.**

EDITORIAL

Public Relations—An Individual Responsibility

Most companies today, which deal either directly or indirectly with the public develop and execute extensive programmes of public relations activities. These firms realize that upon the acceptance of their products or services does their future depend. Even organizations which are more or less monopolistic because of the type of service they provide, are keenly aware of the basic requirement of modern civilization that men must work together and that they have various relations one with another.

With commercial organizations the problem of developing a sound public relations programme, in theory at least, is not too difficult. The executive group of the company concerned may develop a sound policy which, by directive, is instituted throughout the entire firm. A voluntary group such as the Canadian Dental Association, however, has a much greater problem.

Through its Public Relations Committee the Association may offer positive suggestions in respect to this activity, but because each member is responsible only to himself in respect to his private practice and thus in his relationship with the public, it becomes a vexing problem indeed to institute and maintain this sound programme of public relations.

Many people believe that public relations is nothing more nor less than a matter of advertising or the wide use of the press to obtain publicity. This is only one small segment of a much larger picture. Actually an individual or a group will have good public relations when the majority of the public concerned is convinced that his activity or product is good or satisfactory.

Another definition recently proposed, and stated by Mr. Herbert Bain, Director of the Bureau of Public Information of the American Dental Association, reduces public relations to an algebraic formula in which "X" plus "Y" equals public relations. In this equation "X" is the product or service and "Y" is the interpretation or the publicity. From this it can be seen that if the product or service is inferior, then no amount of publicity will result in good public relations.

Basically an adequate programme of public relations, as such a programme concerns itself with the dental profession, should attempt to do the following:

1. Strengthen public opinion that: (1) the dental profession is organized for the service of the public and not for the economic protection of its members; and (2) that dentistry is an authentic health service with a voice in all problems that touch the health of the community.
2. Strengthen the opinion of individual members of the public that personal dental health is an invaluable asset which can be conserved through cooperation with a personal dentist.
3. Diminish unjustified criticism that (1) dental appointments are unavailable within a reasonable period; (2) dental fees are too high in relation to the services rendered; (3) that, economically, the members of the dental profession are advancing more rapidly than other groups of society.

4. Demonstrate to the public that the members of the dental profession have a real interest in community affairs, outside of the limits of their own professional activities.
5. Demonstrate that the members of the dental profession have a continuing interest in further education in order to improve their services to the public.
6. Convince members of the dental profession that the most satisfactory public relations are initiated through the dentist-patient relation at chair-side.

Undoubtedly the final point is the crux of the profession's public relation problem. Each practitioner must be made aware of the fact that to his own patients he is the mirror image of his profession. He is the one upon whom is based his patients' opinion of all members of the profession. When one considers the many legislative problems which face the dental profession in this country at the present time, it becomes increasingly apparent that there is need for a re-emphasis upon attention to this chair-side relationship.

Public relations is not a function of the Public Relations Committee alone. The basic responsibility rests with each individual practitioner and the profession, in respect to its relationship with the general public, will stand or fall by the degree with which each dentist accepts that responsibility.

Book Review

Hypnodontics, Hypnosis in Dentistry.

By Aaron A. Moss. Published by Dental Items of Interest Publishing Company, Brooklyn, N.Y. Pages 291. Price: \$8.75.

This is the most comprehensive text on the subject. Due to the unhappy heredity of hypnosis, many dentists' and physicians' knowledge of the subject is limited; to them it is something mystical. Dr. Moss' text soon rids one of such ideas and covers all phases of hypnosis. After reading this book the dentist or physician realizes that he has been using "controlled suggestion" for years.

Dentists by the score are requesting training in the science of hypnosis. In some areas they are being instructed by stage hypnotists, who are neither trained in psychology nor in the rudiments of dentistry. Dr. Moss' book fills the need for instruction in this science by an experienced dentist who thoroughly knows his subject.

The photographic section of the book is an aid to the beginner in visualizing some of the different

techniques outlined. The excellent bibliography of seventy-four references is an indication of the thoroughness with which the author prepared his material.

Dr. Moss states that hypnosis is a useful adjunct in a dentist's armamentarium. It can be used for patient relaxation, elimination of fear and anxiety, removal of objections toward accepted treatment, conditioning to orthodontic or prosthetic appliances, anaesthesia or analgesia preferably supplementing chemical anaesthesia, amnesia for unpleasant work, control of saliva, prevention or elimination of gagging, as well as other uses. Hypnosis is no substitute for good dentistry nor does it take the place of a sharp needle, well-fitting dentures, and good surgical procedures.

Because all the phenomena of hypnosis can be produced in a waking state, hypnosis is not the best term for the "state of mind" produced. Since Canadians are traditionally conservative and because in the past hypnosis has been associated with mysticism and still is by the stage hypnotist, a better scientific term would be "psychosomatic rest".

The dental profession should be more aware of the importance of periodontal disease. Not enough emphasis has been placed on the causative factors involved in periodontal disturbances, and too many dentists have developed, for one reason or another, a fatalistic philosophy about periodontal disease which leads them to feel that treatment of the diseases of the supporting structures of the teeth is not worthwhile because teeth involved in periodontal disease eventually must be lost.

The recognition of the important role that occlusal balancing can and should play in the treatment and often in the avoidance of periodontal disturbances is essential to a successful rationale of periodontal care.

Max B. Winslow, D.D.S., *Journal of the American Dental Association*, March 1954.

The Library

The Library of the Association consists of practically all the books related to dentistry which have been published during the last ten years. A considerable number of volumes published earlier are also available.

The Library has been made possible through the generosity of interested members of the Association. All monies received are used for the purchase of books. The Association bears the cost of administration.

For the benefit of members and all others interested, the library is open daily from 9.00 a.m. to 5.00 p.m. except Saturdays and Sundays. All dental periodicals are available.

Books may be borrowed by the membership by writing: Librarian, Canadian Dental Association, 234 St. George St., Toronto.

Additions:

ANDERSON, W. A. D. Pathology. 2nd ed. 1953. 139p. illus.

BUNTING, R. W. Oral hygiene. 2nd ed. 1954. 283p. illus.

COMROE, B. I., COLLINS, L. H., and CRANE, M. P. Internal medicine in dental practice. 4th ed. 1954. 563p. illus.

GINSBERG, E. L. Public health is people. 1950. 241p.

McNEIL, C. K. Oral and facial deformity. 1st ed. 1954. 127p. illus.

MUSTARD, R. S. An introduction to public health. 3rd ed. 1953. 315p.

NATIONAL RETAIL CREDIT ASSOCIATION. Physicians' and dentists' credit and collection manual. 1933. 55p. illus.

PRATT, R. Antibiotics. 2nd ed. 1953. 398p. illus.

TYDINGS, K. S. A guide to medical and dental photography. 1953. 124p. illus.

The Association

U.S. Commission on Chronic Illness Recommends Fluoridation

The U.S. Commission on Chronic Illness has endorsed the fluoridation of drinking water as a protection against tooth decay.

Meeting in Chicago, on March 19th last for a three-day national conference on care of the long-term patient, the Commission responded to inquiries about the effect of fluoridation on chronic illness by taking a position urging American communities "to adopt this public health measure as a positive step in the prevention of the chronic disease, dental caries (decay)."

The action was based on the report of a committee appointed by the Commission's board of directors to make a special study of the subject. The committee is headed by Dr. Kenneth F. Maxcy, professor of epidemiology, John Hopkins University School of Hygiene and Public Health, Baltimore, and includes Dr. Edward J.

Steiglitz, geriatrician of Washington, D.C., and Dr. Nathan Shock, chief of the section of gerontology, National Institutes of Health, U.S. Public Health Service.

This group advised the Commission that "extensive research into the toxicology of fluorine compounds has revealed no definite evidence that the continued consumption of drinking water containing fluorides at a level of about one part per million is in any way harmful to the health of adults or those suffering from chronic illness of any kind."

If a risk at all, the committee says, it is so minimal and inconspicuous that it has not been revealed in many years of careful investigation.

Leonard W. Mayo, director, Association for the Aid of Crippled Children, New York City, and chairman of the Commission, said this is the first time in its five-year existence that the Commission has taken a comparable action on a matter of public health policy.

The Commission on Chronic Illness is an independent, non-profit group composed of 34 members drawn from a variety of

fields concerned with chronic illness. It was founded by the American Hospital Association, the American Medical Association, the American Public Health Association, and the American Public Welfare Association.

Today's statement says that the major portion of scientific opinion is that fluoridation of water supplies for the prevention of dental caries presents no hazard to public health.

The Maxcy committee says that information bearing on this question has been derived from two sources: (1) studies on the metabolism of fluorides in man and in experimental animals; (2) observations on human populations exposed to water supplies in excess of the recommended amount. Neither line of inquiry has produced evidence of any harmful effect on either well persons or persons with chronic disease, the report said.

The statement emphasizes that proponents of fluoridation recognize excessive ingestion to be undesirable and recommend that whenever practical, the excess be removed where it occurs naturally.

Studies conducted over the last decade have established the fact that the protection against tooth decay given by naturally occurring fluorides is also conferred by water to which this element has been added.

The Commission notes that the fluoridation of water supplies involves no new experience in human welfare. Over 3,000,000 people are living in ordinary good health on water naturally containing fluorides in the amounts recommended for caries control or more.

Ottawa's immediate action. It is well known, and indeed has been officially noted by the Dominion Government that there is a serious shortage of dentists throughout the country. There are only five colleges which give professional training. The largest of these is in Toronto. It is surely logical that an expansion of training facilities should be generously supported by the national Government, since the benefit is general.

Health Minister Martin is unquestionably aware of the late Prime Minister King's determination that Dominion Government health grants would be used to bring facilities and technical standards to the point where no one in Canada would be denied adequate treatment. Under the circumstances, adequate dental treatment to everyone in Canada is a goal far from realization in no small degree due to the fact that no more dentists can be trained in any year with the existing facilities.

Mr. Frost referred to the fact that the Province was for a number of reasons unable to take up certain grants for health purposes, which remain available, if unspent. He suggested that these funds might well be allocated instead for the enlargement of the College of Dentistry. That is a reasonable request. The Dominion Government's support of higher education is actually so small there is no moral argument against a substantial grant. Mr. Frost has already given a million dollars for the purpose. He will give as much more as Ottawa might offer. It is a challenge Mr. Martin ought to be prompt to take up."

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*\$1,800,000 by Sugar Industry for
Public Relations Campaign*

According to the March 6th issue of Editor and Publisher the sugar industry has begun a three year advertising and public relations programme to persuade the public among other things, that sugar is a non-fattening part of the diet, which can help people to reduce. The cost of the campaign is stated to be \$1,800,000.

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*Editorial — Toronto Globe and Mail
3 April '54*

Ottawa's Obligation

"Premier Frost's offer to match dollar for dollar any contribution the Dominion Government might make toward the expansion program of the College of Dentistry at the University of Toronto merits

Committees and Councils

Auxiliary Services

The Committee on Auxiliary Services of the Canadian Dental Association is a special Committee of three members elected by the Board of Governors plus the Chairmen of the Legislative Committees of all provincial Boards. The duties of the Committee are:

1. To study the need for and development of auxiliary dental personnel.
2. To develop policies respecting these auxiliary personnel.
3. To make recommendation respecting the proper use of auxiliary personnel by the profession.
4. To advise Corporate Members, when requested, concerning matters relating to auxiliary services.
5. To cooperate with the Committee on Legislation.

1. Since the last report of this Committee to the Board of Governors in Vancouver there have been two events of considerable importance reflecting on the relation between auxiliary services and the profession; one, an all out attempt by the so-called independent labs in British Columbia to obtain legislation to permit them to deal directly with the public in supplying denture service; the other, in New Brunswick, came to a head through an application by the New Brunswick Dental Society to the legislature for a completely revised Act.

2. In British Columbia these labs which had organized for the express purpose of trying to obtain legislative recognition as an organization, carried out a paid advertising campaign in the newspapers to acquaint the public with their views based on the usual line that they were competent to give a service equivalent to that of a dentist for less money since they did practically all the work anyway and the dentist received the profit. This was answered in kind by the College of Dental Surgeons of the Province

pointing out the dangers in untrained individuals being permitted to interfere with the tissues of the human body. To bolster their argument, the labs held out the situation which has existed for years in Alberta under a clause of the Public Health Act permitting an association between dentist and dental mechanic which has been outlined in detail in previous reports of this committee, as operating to the satisfaction of the public, the dentist and the mechanic. Their proposal, though, differed in several very important points. In Alberta, the Public Health Board administers the permissive clause. Both the lab and the dentist must register with the Board their intention to associate and, for what it is worth, which isn't much, each must sign an agreement to perform his particular duties in any given case.

3. This Bill as presented was rather loosely drafted, ambiguous in places and contradictory to a degree as between various clauses. There were three particularly significant sections, indicative of the preposterous aspirations of lawlessly inclined elements trying to establish an unwarranted position. The first such section proposed an "Association to be known as the Registered Dental Technicians' Association of British Columbia", and the next amplified this by defining a dental technician as "anyone registered under this act and a person who is the holder of a certificate in good standing entitling him to practice his *profession* in the province of British Columbia, who makes, produces, furnishes, alters or repairs any prosthetic denture". Thus, there would be established in one short sentence through legislation a new "*profession*" with no standards of education, training or conduct. An executive group would then be set up as a "Board of Governors" of five persons to be appointed by the Lieutenant-Governor in Council. These five Governors would, of course, be chosen from amongst the so-called "registered dental technicians" since the wildcat mechanics were to be the only charter members. There was no provision that dentistry

should be represented on this Board of Governors.

4. This Board would then make regulations providing for the admission of technicians to the new "profession" of prosthetic dentistry, prescribe the necessary qualifications for admission and for a register of such persons, the examinations required, the disciplining sections and general control of the members who, it was provided, would be known as "registered dental technicians".

5. One section which reads as follows is a gem of generosity: Section 7, sub-section (1) "Nothing in this Act or the regulations shall be deemed to prohibit any person from working as an employee of a legally qualified dentist and in the course of or as the whole or a part of his duties, performing for his employer work services of a kind ordinarily performed by a dental technician". Section 7, sub-section (2) graciously "permits dentists, university or municipal clinics and apprenticed dental technicians to perform, work or services ordinarily performed by a dental technician". Section 7, sub-section (3) reads, "Nothing in this section shall be deemed to permit any person who is not a registered dental technician to engage generally in the service of dentists or of two or more dentists in the performance of the work of a dental technician but the working in the service of a firm or association of dentists practising as partners or similarly associated with one another shall be deemed working in the service of one dentist"; thus no dentist in the province could employ a technician who was not registered under this proposed act nor could he employ any person to do any of the things ordinarily done by a mechanic. According to this, a dental assistant could not make casts or models or do any similar jobs. It is apparent that sub-sections (1) and (3) of Section 7 are directly contradictory. However, since the things "ordinarily done by a mechanic" would have to be defined and this is not done, there would be considerable doubt how such provision in a provincial

statute would stand the scrutiny of a court.

6. Another clause would permit any dental technician to deal directly with the public though providing that no work or services shall be performed which would infringe upon the work or service of a dentist and that all such work or service rendered by any technician should be limited strictly to the work of a technician as herein defined but there is no definition of "work or services rendered by a technician".

7. In order to assure that no one registered under this act would be seriously inconvenienced if caught practising dentistry illegally, the penalty was to be, "a fine of not more than \$100" or, if a corporation, "of not more than \$1,000."

8. Then comes another peculiar clause which reads as follows: Section 12, sub-section (1) "all dental technicians who are members in good standing of the the Dental Technicians' Society of British Columbia, shall be entitled as of right to membership in the Association", and the particular virtue of this section is that the "Dental Technicians' Society of British Columbia" is the organization of B.C. independent mechanics who were pressing for the adoption of this bill. Section 12, sub-section (2) reads as follows: "all persons, other than those who are members in good standing of the Dental Technicians' Society of British Columbia, carrying on business as dental technicians on the 31st day of March, A.D., 1953, shall be entitled to membership in the Association by applying to the Board for registration and complying with the rules of admission as prescribed by the Board and upon payment of the prescribed fees." Thus all legitimate and properly trained technicians would be subject to the rules and regulations set out for admission to the wildcat body and with the control originally settled in these groups there would be little doubt as to where it would stay.

9. As mentioned in the beginning of the report, the Alberta situation was held out

as an example and will continue to be so. Naturally, there have been suggestions and some pressure from many sources that the Alberta Association should have the Public Health clause repealed. You may be sure the Alberta Board has had this same thought for a good many years. However, anyone who has been around legislatures much is quite aware that once legislation is enacted there is little chance of having it repealed unless there is some considerable public demand for such repeal or violent public reaction to the legislation. A little thought will recognize a legislators' reaction; if there is no public outcry then people must be satisfied, and well enough will be let alone. In Alberta, on the contrary, there is, amongst certain sections of the public, considerable support for the relation thus established for association between dentist and mechanic. Many people believe that they are obtaining an equivalent service at less cost and this Committee believes that a large part of the blame for this attitude must be laid at the door of a section of the profession. There is little likelihood of having the offending clause taken out of the Public Health Act, for some time at least.

10. The B.C. Council interviewed the provincial government pointing out all the dangers inherent in any such legislation, effectively enough so that the government refused to introduce it as a government measure. Instead, it was referred to the Private Bills Committee for study and report. Representatives of the Council and the mechanics presented their respective cases. For this interview the Council brought Dr. Gullett to Victoria and he also presented a moderate though forcefully phrased brief in opposition. The net result was that after the hearing and due consideration, the Private Bills Committee refused to endorse the bill on the grounds that it would not be in the best interests of the public. A copy of the proposed bill and of the brief as presented by Dr. Gullett appear in the Transactions of the C.D.A.

11. Your committee believes that these B.C. mechanics will consider this as only a temporary set-back, not as a defeat. It would seem logical that since this more ambitious plan failed, they might try to get something patterned more after the Alberta arrangement in spite of the apparently more restrictive regulations.

12. In New Brunswick the situation was considerably different; the independent labs coming into the picture publicly through the presentation of a completely new dental bill to the legislature by the New Brunswick Dental Society. This new act provided more stringent requirements and qualifications for registration and practice. From the sketchy information available it appears that two or three dental mechanics had established themselves in practice for a considerable number of years without too much interference by the professional body. The proposed new legislation would have made it impossible for these men to register, yet, over the years, they had established and maintained a practice which appeared to be satisfactory for their patients and, since this was claimed to be their only livelihood and legislatures are notoriously chary of limiting a man's means of livelihood, their contentions obtained a lot of support. There didn't appear to be any organized effort to obtain recognition for technicians as a whole but merely to retain the position these men had established. The net result of the legislative and committee discussions appears to be summed up in the clause relating to prescriptions for prosthetic appliances which, by implication, if not in fact, established a relation between a technician and a dentist which is wrong in principle and which, in practice, to a degree, makes the patient self-prescribing. This could nullify the results both the patient and the dentist should expect from any appliance. This objection is part of the prescription clause requiring the dentist to give a prescription free of charge to such dental technician as the patient may designate. Unquestionably, this will lead to trouble with the wildcat

labs. However, since there is no compulsion on any dentist to serve any patient, the effect of this section may be nullified by the dentist refusing to serve any patient who might take advantage of it. This would depend solely on the attitude of the individual dentist towards his profession.

13. Another clause in the New Brunswick Act gives the society authority to prepare by-laws for the regulation and control of dental hygienists.

14. The committee believes that these spasmodic but increasing efforts of wildcat mechanics is going to continue and that in all probability they will, from time to time, get further recognition. The unfortunate feature is that they have strong public support from individuals who can not or will not recognize the damage that can be done by them. Their sole appeal is the price and the fact that they reiterate again and again that though they make the dentures the dentist gets the most of the money. It behooves every dentist practising in Canada to make himself a public relations man, explaining to every denture patient where the subject arises, the relationship that should exist between the profession and the technician, emphasizing the biological factors involved and explaining that the technician's job is purely a mechanical process, the fundamentals of which may be learned in a short time. We wish to emphasize again, as in the past, that the apathetic attitude of the average dentist towards this situation is the basic cause of most of our troubles with the wildcat labs today.

15. In the United States, the American Dental Association still believes that certification of labs by state or local organizations is the best available answer to the problem. This may be true but after considerable study of the situation this Committee is of the opinion that the establishment of a legal status under provincial statutes for legitimate technicians with self-disciplining powers is the most effective answer. Unfortunately, these legitimate technicians do not, themselves,

recognize the problem they have until their livelihood is actually threatened and by that time it is too late.

16. Your Committee believes that the problem created by illegal practices by mechanics should be examined and a policy established for the guidance of provincial legal bodies in all provinces dealing with the outlaw operators, whether this should be by means of certification, by an attempt to organize legitimate labs provincially for their own welfare and that of the public and the profession or by whatever means may seem best. The time is long past when a negative attitude towards the situation will suffice.

17. It is probably impossible to avoid some conflict in reporting as between this Committee and the Committee on Legislation. However, since these matters concern an auxiliary service, we have covered the subject as fully as seemed necessary.

18. The situation across the whole country regarding hygienists is rather peculiar. All provinces have legislation now permitting the practice of dental hygiene and the demand for their services is greater than the supply, yet comparatively few girls seem to be taking the course. This is probably due to the fact that the opportunities for such work in Canada are only beginning to become known. Most girls now take their training at various schools in the United States, though the information is that Toronto has a considerable number of applicants for this year. However, classes are limited to 10, most of which will probably be absorbed by public services on graduation. There is a great need for courses to be established in other Canadian schools though there appears to be no willingness on the part of any of them to establish such courses. It is possible that provincial boards might use their influence effectively in this respect.

Respectfully submitted,

A. M. Revell,
H. R. MacLean,
R. A. Rooney, Chairman.

Economic Security

TO THE MEMBERS OF THE CANADIAN DENTAL ASSOCIATION

We take pleasure in announcing to the Membership that the technical means now have been found, and the arrangements approved by the National Executive of the Canadian Dental Association for the establishment of a nation-wide Blue Cross Plan for the benefit of the Dental Profession.

Details will be communicated later by the C.D.A. Plan Administration Office, but it should be noted that the exceptional benefits of Blue Cross now will be available to Members who heretofore have been unable to obtain them, and that for those who previously have enjoyed these facilities, the Benefits will be substantially increased.

Members will be interested also to know that this is the first national Blue Cross Plan to be established.

R. P. Lowery,
P. G. Anderson,
Trustees.

Hospitalization: Another Benefit Pioneered by The C.D.A.

by E. L. R. WILLIAMSON, M.B.E., B.P.A., F.R.E.S.

Consulting Economist & Administrator of the
C.D.A. Life-time Economic Security Plan.

The increased and increasing problem of meeting the cost of hospital expenses needs no amplification here: It is obvious from discussion in the Press, in Parliament, in the reports of the hospitals, and personal experience.

It is equally obvious that such heavy costs can be met most wisely through some form of insurance: a spreading out of payments over a sufficient period of time to make the burden equitable.

That insurance companies have found the provision of hospitalization coverage increasingly difficult is demonstrated by constantly rising rates plus the protection (from their standpoint) of: Cancellability of the contract, Limitation of access to benefits (see Article IV), including elimination of all pre-existing conditions, Limitation of duration, and Amount of benefits (See Article V) including limitation of "hospital services" benefits to an amount proportionate to the number of days in hospital.

The increasing importance of "hospital services"—which embody a majority of the recent important advances in medical science—is illustrated by two cases recently coming to our attention:

1. Period of hospitalization: 1 day
Per diem charge: \$7.00
"Services charges": \$87.30
Total: \$94.30 for one day.
2. Period of hospitalization: 61 days
Total per diem charge: \$427.00
"Services charges": \$1,095.15
Total: \$1,522.15

Since it is an actuarial impossibility to cover families on a Non-cancellable, Guaranteed Renewable, fixed premium basis, the best coverage available has been Blue Cross. But this benefit has been unavailable outside of a few metropolitan centres because of insufficient numbers, lack of administrative facilities, and the fact that in the event of removal from the locality of the few groups, the contract could not be maintained, except on an individual basis at a higher premium rate. Or in the event of removal to another Province, either cessation of Benefits, or access to Benefits only on a completely new basis, without credits for previously accumulated Benefits.

On the previous page of this issue the Members will have noted the Announcement of the Trustees of the C.D.A. Plan concerning the establishment for the benefit of the Members of the C.D.A. the first nation-wide Blue Cross Group.

This will make Blue Cross Benefits available to every Member of the C.D.A. and their families without regard to present or future place of residence. (Special provisions as regards Members in those Provinces having compulsory government-operated plans will be communicated to them).

The following is a list of the principal Benefits which will be available in this National Blue Cross Plan for the Dental

Profession:

- * No exclusion of pre-existing conditions
- * No termination because of age
- * Up to 180 days' Hospitalization for any one case for each member of the family.
- * Drugs, medications, and biological sera to \$150.00.
- * X-Ray Examinations to \$150.00.
- * Full cover for other technical tests and services in addition to above.
- * Nursing, Operating Room, and Laboratory Services.
- * Unlimited cover for Maternity.

No more comprehensive Hospitalization coverage has come to our attention and we believe none more suitable to the needs of the Dental Practitioner to be possible.

The Corps

Brigadier E. M. Wansbrough has left for Europe where he will inspect Nos. 1 and 35 Field Dental Units and attend the Annual Meeting of the Federation Dentaire Internationale.

Lieut.-Col. C. M. Sinclair has left for Korea where he will assume command of No. 25 Canadian Field Dental Unit.

Lieut.-Col. G. B. Shillington visited the Medical Field Service School, Brooke Army Medical Centre, Fort Sam Houston, Texas, in March.

Major G. R. Covey attended the post-graduate course in Periodontics held at the University of Toronto from 26th to 30th April.

Promotion of Capt. J. M. R. Gourdeau to the rank of Major has been announced.

Major Gourdeau was born in Penetanguishene, Ont., graduated from the University of Montreal in 1949 and was appointed to the Royal Canadian Dental Corps the same year. He has served in Korea and the Maritimes, and is at present serving in Camp Borden, Ont.

He is married with two children.

Correspondence

To The Editor:

Dear Sir:

May I commend your publication for the excellent articles on Insurance by Mr. E. L. R. Williamson, and your forthright January Editorial.

Professional men seldom find time to delve deeply enough into the intricacies of Insurance and

this necessity of life is often purchased to dispose of the agent instead of protecting the purchaser.

The March article, in particular, provides a lucid background picture of the C.D.A. Plan.

I trust you intend to publish these articles for the benefit of our French Confreres.

With best wishes for the continuing success of your Editorial efforts, I remain, etc.

John French, D.D.S.,
111 Metcalfe St., Ottawa



A.D.D.Ss. R.F. Advisory Staff photographed at the R.C.D.C. Unit Commanders' Conference held in Ottawa in March 1954.

Left to right: Col. L. E. Kent, M.B.E.; Col. C. L. Strachan, E.D.; Col. J. P. Whyte, E.D.; Col. J. F. Edgecombe, O.B.E., E.D.; Brig. E. M. Wansbrough, O.B.E., M.M., E.D., C.D.

Displayed on the table from left to right are: The Trelford Trophy; Flagstaves with the Union Jack and the R.C.D.C. Flag; The Saskatchewan Memorial Trophy.

The Provinces

Quebec

On Monday, April 26th, 1954, the **Montreal Dental Club** was privileged to have as its guest speaker Dr. Phillip Jay, a Professor on the Faculty of Dentistry of the University of Michigan. Dr. Jay's topic for the evening was "Dental Caries Control Methods."

Dr. Jay is well versed in this field as he is also a Director of the Caries Control Research Laboratory of Michigan, a member

of the Council of Dental Therapeutics and a consultant of the United States Public Health Department on Fluorine Study.

The talk was opened with a discussion on the Etiology of Dental Caries and its relationship with nutrition. Severe malnutrition plays very little or no part in dental caries. There is absolutely no chemical change taking place in the mouth in these severe cases. The lactobacillus count can be very low in such cases.

This information was forthcoming in a study by a Dr. Day—U.S. Public Health Officer—in a famine stricken area in India. In

severe metabolic disturbances there were 35% to 40% caries free with the remainder running at 1.4 to 1.6 cavities per child. The diet for these children consisted mainly of carbohydrates with very little protein and practically free from sugar. The sugar intake consisted of 2 gms. a day.

Further studies were made on rats in which a large number were bred from caries susceptible parents. The offspring were tabulated and with saliva tests a certain percentage were found free from caries, the remainder varied in lactobacillus counts. With these rats it was found that the addition of vitamins, varying the carbohydrate and protein intake had little or no effect on the lactobacillus count, but with the addition of sugar a tremendous change took place. The count dropped as soon as the sugar was discontinued. Similar studies took place in caries susceptible patients and with special sugar free dieting the lactobacillus count was quickly lowered.

Dentifrices:

To date all dentifrices have absolutely no effect on the reduction of the lactobacillus count.

Fluorides:

Extensive research has been carried out in this field and there is absolute clinical proof that fluoridation of the drinking water will reduce decay by about 40 to 60%.

Following are a number of conclusions attained through controlled studies of various communities.

1. Once decay has started on any tooth, sodium fluoride is of no value.
2. From a periodontal aspect adults in these fluoridated areas have three times as many teeth between the ages of 40 to 45 as those in non-fluoridated areas.
3. From a medical viewpoint there is absolutely no contraindication for its use. All diseases were studied in these areas and a comparison made with the country as a whole and similar areas not exposed to fluoridation and it was found that in no cases did it have any detrimental effect.

In conclusion, topical use of Sodium Fluoride is the next best.

—P.A.L.

British Columbia

On April 6th the **Vancouver and District Dental Society** met in the Mayfair Room of the Hotel Vancouver and were addressed

by Dr. C. H. M. Williams, associate professor of periodontics, University of Toronto.

The afternoon subject was "Simple Methods of Periodontal Pocket Therapy" and the evening topic was "Occlusal Correction."

Dr. Williams, who has participated in several research projects, was sent to the Arctic to view the appalling wear of teeth. But he discovered no damage to the periodontal tissues. In his opinion there is no clinically normal recession of the gums of human teeth. The teeth wear to compensate for stresses. Occlusal correction, he emphasized, is necessary to put the teeth into function, by grinding for centric and ex-centric relations.

Dr. M. J. Waterman reported a paid-up membership of 255, with ten more aspirants to be voted upon at the next meeting. (Vancouver and District has 335 dentists, so that 265 is a fair representation of those interested and active.)

Dr. Williams presented his stimulating lecture next day to the **Victoria and District Dental Society** and was greeted with enthusiasm and a full attendance of members.

The **B.C. Dental Association's** Dental Health Committee has sponsored paedodontic clinics to outlying districts. Dr. Max Nacht of Vancouver presented a clinic recently in Prince George, one of the centres which has mushroomed since the famed Kitimat project began. The object of these clinics is to assist local dentists in caring for children's teeth — a vital problem all over British Columbia.

Dr. Nacht reported that his clinic was very well received and he felt the dentists in this area were very appreciative of clinics of this nature. He suggested that it would be wise to have another paedodontist visit this same area in possibly one year's time.

The **Fraser Valley Dental Society** had scheduled for its April meeting a lecture by Dr. J. G. Ryan of Vancouver. The notice sent to members was a bit hazy — it mentioned that "Dr. Ryan has such an interest in our affairs that he has an alternate ready in case he himself is detained." As it happened, Dr. Ryan did not arrive. Instead a new son arrived for the Ryan family. The lecture in Mission was given by the alternate, Dr. Keith Lindsay, also of Vancouver, on "Oral Surgery". Dr. Emery Jones attended and spoke on College affairs to this active section of our dental fraternity.

—D. H. M.

Ontario

At a recent meeting the Senate of the University of Toronto gave reading to a Statute instituting the **Hugh Alexander Hoskin Award** in the Faculty of Dentistry at the University of Toronto. This award, which has been made possible through the generous donations of Dr. Hoskin's former students and Faculty colleagues, will be made annually to the student in the final year who shows greatest proficiency in the field of dental diagnosis. The award will be of the value of one hundred dollars and will be made in perpetuity, as the generous nature of the contributions have made such a course possible without encroaching upon the principal sum.

This spontaneous and enthusiastic recognition of the contribution that Dr. Hoskin made to his profession and University is a fitting tribute to his fine personal qualities and professional integrity.

At the time of his retirement he also received a unique tribute from his Faculty confreres in the form of a walnut desk plaque upon which were mounted the keys to the offices where he had served so faithfully for more than thirty years. The plaque bore an engraved plate bearing the inscription, "These keys, which symbolize many years of faithful and loyal service, were presented to Dr. Hugh Hoskin upon his retirement from the Faculty of Dentistry, June 30th, 1951."

The plaque was accompanied by an illuminated address, tastefully bound in morocco leather in the Faculty colours, and bearing the signature of all his Faculty confreres. The text of the address was as follows: "In recognition of thirty-one years of loyal and distinguished service to his Faculty and University, the Council of the Faculty of Dentistry, University of Toronto, having regard to his expressed wish that his retirement should take place without ceremony or ostentation, has pleasure in presenting to Hugh Alexander Hoskin this symbolic memento in acknowledgement of the part that he has played in the development of his beloved profession in Canada.

It brings with it the mark of high esteem and warm personal affection in which he is held by this Council, and while it may bring to mind trials now past and tribulations long overcome, it is our hope that it may recall also the many happy hours spent in association with his former colleagues and students.

In addition may it bring to him a sense of satisfaction from the high accomplishment that his efforts have brought to this Faculty, and bespeak the gratitude and thanks of more than three decades of den-

tal students, whose privilege it has been to have known him as a teacher, a scholar, a gentleman and a friend."

We congratulate Dr. Hoskin on this unique and well-deserved tribute and hope that his retirement to his native County of Northumberland may continue to bring him a full and happy life. J. H. J.

The **Hamilton Dental Association** held its seventh and final dinner meeting of the 1953-1954 programmes at **Fischer's Hotel**, Thursday April 15, 1954. The annual elections were held at this meeting and the new executive is as follows: President, Dr. W. J. Hambley; Immediate Past President, Dr. N. L. Robinson; Vice-President, Dr. G. M. Morrow; Secretary, Dr. J. F. Kilgour; Treasurer, Dr. W. Feasby; Directors, Dr. L. J. Easter and Dr. R. H. Finlayson.

The other three meetings, not already reported, were also dinner meetings at Fischer's Hotel. In January, Dr. Frank C. Starr from the University of Ohio gave an afternoon and evening clinic on Crown and Bridge Work. In February, Dr. W. D. Clark, of Hamilton, gave a talk on "Full Denture Problems," which was particularly well received. In March, Dr. A. A. Antoni, of Toronto, gave a most interesting address on Practical Oral Surgery. G. M. M.

At a monthly dinner meeting of the **Essex County Dental Association**, members were addressed by Dr. Louis C. Schultz of the School of Dentistry, University of Michigan.

Dr. Schultz discussed the relationship existing between patient and dentist.

Early in April dentists of the **Lambton County Dental Society** and guests from Port Huron and London heard five clinicians from the **Detroit Clinic Club** discuss Endodontic procedures. Drs. Mackey, Montagne, Cameron and Kosks of Detroit dealt with the Sectional Method of Root Filling, Pulpotomy, Diagnosis and Culture Procedures. Dr. Fenech of Windsor presented case histories and a method of root resection. A. T. S.

The **Peterborough Dental Society** held its first Ladies' Night recently. The guest speaker was Dr. Edward Johns of Kingston, President of the Eastern Ontario Dental Association, and he spoke of his recent trip through Greece when he did research work in connection with the effect of poor diet on children's dentition. Following his talk, Dr. Johns showed films and coloured slides of his trip.

Dr. A. H. Ball, President of the Association, was Chairman of the meeting.

The Rotary Club of Toronto has presented to the **Dental Research Fund** of the Faculty of Dentistry, University of Toronto, a donation of \$2,500 to be directed specifically to research as it relates to the general field of dentistry for children. The presentation was made by the President of the Rotary Club, Mr. Neil P. Petersen, to Dr. Roy G. Ellis, Dean of the Faculty of Dentistry.

The research fund has reached a second stage in its goal toward the \$300,000 objective, such sum to be used to expand the dental research facilities at the Faculty.

More than 1000 Ontario dentists have accepted the challenge to improve dental health by contributing \$139,688 to the Dental Research Fund.

The second stage of the drive will be centered on financial assistance from industry and various other business concerns.

At a meeting of the **Kent Dental Association** Dr. Jack Woods of Dresden was elected President of the Association. Also elected to the new executive were Dr. Frank Switzer, vice-president; Dr. Bob Jones, treasurer; and Dr. R. O. Thayer, secretary.

Dr. J. H. Johnson, President of the Ontario Dental Association and Professor of Dental Surgery at the University of Toronto, was guest clinician at the first meeting of the reorganized **South Waterloo Dental Society**.

Dr. Johnson spoke on "Some Aspects of Modern Dental Surgery," a subject on which he had presented a paper to the Midwinter Meeting of the Chicago Dental Society a few weeks before.

Dr. J. R. Grandy, President, welcomed Dr. Johnson to Galt, and in a brief business meeting the following officers were elected for the ensuing twelve months. President, Dr. G. A. Cowan, Hespeler; Vice-President, Dr. John C. Dyer, Galt; Secretary-Treasurer, Dr. J. C. White, Galt.

J. C. W.

Dr. David Mitchell was elected president of the **Peterborough and District Dental Public Health Committee** at a recent meeting. Other officers elected were: Mr. Dick Stewart of Otonabee, vice-president; Mr. William Ashton, and seven executive committee members: Miss Jean Buck, Mrs. Vert Reynolds, Miss Rachel Young, Mrs. Clarence Coones, and Doctors Al McDougall, Bob Nelson, and Ralph Green.

This committee has been set up to educate the public of Peterborough and district on the prevention of dental diseases in children.

Saskatchewan

The **Moose Jaw Dental Society** paid a visit to the **Saskatoon Society** and everyone thoroughly enjoyed and benefitted by the occasion. Dr. Hare spoke briefly on the fellowship existing between the Societies and the value of such associations. Dr. Muirhead referred to the Clinicians of the past years and those planned for this year by the Saskatchewan Dental Association. Dr. Bradley reported at length upon the work of Dr. Miller and himself in identifying the victims of the T.C.A. crash in Moose Jaw. They were chiefly responsible for identifying the last thirteen bodies.

Dr. Lowey, the President of the S.D.A., gave a detailed accounting of his stewardship in office for the past year and outlined plans for the coming term.

The meeting provided for a stronger professional relationship—an inspiration towards higher professional objectives and excellent fellowship.

The **Saskatoon Dental Society** was honored by a visit of Dr. J. P. Whyte, the President of the Saskatchewan Council of Dental Surgeons, as the guest speaker.

Dr. Whyte chose as the subject for his address, "Organized Dentistry in Canada". His remarks were very pertinent, timely and well received. The Society appreciated the contribution made by Dr. Whyte and plan to make the visitation of the President an annual feature.

L. D. H.

Alberta

The March meeting of the **Central Alberta Dental Society** was held in Red Deer, March 24th.

Dr. Lorne Oatway gave a resume on Dental Health Week and distributed all available literature to representatives in each centre.

Dr. John Roseborough was elected to represent the society at the House of Delegates meeting in Banff during the June Convention.

The guest speaker was Dr. Scott Hamilton. Dr. Hamilton presented several interesting movie reels on surgical procedure in the office and also on the subject of Oral Surgery. Dr. D. Culham, on behalf of the society, thanked Dr. Hamilton for his presentation.

A. L. G.

General News

At Akron, O., fluoridation was started and stopped within ninety days. At Sheridan, Wyo., fluoridation was discontinued after two years' operation. At Fort Worth, Tex., fluoridation never got started because the City Council rescinded its favourable action of last August after the issue was degraded by the opposition to a level at which the dental society withdrew its active leadership. In all three instances, it was implied that the dental society had "lost the issue". Thus has the public mind identified fluoridation as a project of and for the dental profession.

It would seem that the time has come for the dental profession to take a long, objective look at its role in fluoridation. That role is specifically described in a statement adopted by the House of Delegates of the American Dental Association in September 1953, entitled "Role of Dental Profession and Official Health Agencies in Fluoridation of Public Water Supplies":

"The dental profession serves the community in its fluoridation programme by providing informed leadership to citizen groups and to community officials. The provision of this leadership involves informing the members of the dental profession on the dental and public health aspects of fluoridation; informing the public, generally, of the need for the measure in the prevention of dental caries; interpreting to individuals, community groups and civic officials the scientific data that have established the safety and efficacy of the measure, and participating in a technical advisory capacity in organized community efforts to obtain adoption of the measure."

The dental role in fluoridation then, has been established as one of professional and technical leadership whereby individuals may be helped to recognize the sources of proffered scientific information and to discriminate between emotion and fact. It is the citizen groups that must assume the major responsibility for obtaining adoption of the caries-preventive measure. For, it is the **public** that wins or loses.

Dental Health Highlights. April 1, 1954.

It is interesting to note from time to time the effect, from a public relations standpoint, of the dental profession's endorsement of fluoridation. The following excerpt from the "Western Producer", a newspaper in Saskatoon, Saskatchewan, presents an interesting commentary about the profession's action.

"But there is a feature of it (fluoridation) which is so unusual in these days that it

should not be allowed to pass without notice. We refer to the fact that dentists are among the strongest advocates of fluoridation. That, in this materialist, money-grabbing world of ours, is surely a pleasing and encouraging thing. Fluoridation, we are told, is going to reduce sharply if not eliminate disease of the teeth. But dentists make their living by ministering to diseased teeth. Hence when they advocate fluoridation, presuming that it will do what they claim it will, they are in effect taking the bread out of their own mouths; they are deliberately reducing if not destroying their source of income. There is altruism and no mistake! When, after fluoridation has effected its miracles and the last dentist has put away his tools and the last dentistry school closed its doors, a grateful humanity should erect a noble memorial to those unselfish members of the profession who helped to bring the benefits of fluoridation to humanity even at the sacrifice of their own livelihood."

New evidence on the so-called "anti-enzyme" dentifrices does not support original claims made for their effectiveness, the A.D.A. Council on Dental Therapeutics reported last week. In a resolution approved unanimously at a meeting in the Central Office, the Council said it had reviewed the evidence on anti-enzyme dentifrices and had "found no satisfactory clinical evidence of their effectiveness against tooth decay". In the same resolution, the Council also emphasized that new evidence conflicts with the original claims "as regards a superior ability" of a dentifrice containing sodium N-lauroyl sarcosinate to prevent the occurrence of a dangerous acidity in the dental plaque. The sarcosinate is one of the anti-enzyme agents that has been widely hailed as an inhibitor of tooth decay. Two dental scientists, of Georgetown University, reporting on a test of the sarcosinate compound in the February issue of *The Journal of the American Dental Association*, said there "is a clear indication that the agent has failed to fulfill the claims made for it". The investigators were Dr. Walter C. Hess, professor of biological chemistry and director of the department at the School of Dentistry, and Dr. Bernard K. Forscher, assistant professor at the school. At the Council meeting, Dr. Thomas J. Hill, of Cleveland, presided. Dr. Paul C. Kitchin, of Columbus, Ohio, was elected vice-chairman.

British Commonwealth News

SIR FRANK COLYER, F.D.S., F.R.C.S.,
LL.D.

An Appreciation

The passing of Sir Frank Colyer on March 30 was not only a national, but also an international, loss to the dental world.

He was born in 1866 and educated at Dulwich College. Deciding on dentistry as a career, Colyer's studies were pursued at the Charing Cross and Royal Dental Hospitals, London, where he was straightway recognized as an outstandingly brilliant student. In 1887 and 1889, he gained respectively the diplomas of L.D.S. and L.R.C.P.

In 1890, he entered into partnership with John Ackery, one of the most talented and highly respected practitioners of his day. In the following year, he was appointed to the staff of the Royal Dental Hospital, and in 1904 became Dean.

It was soon apparent that his *forte* was comparative dental anatomy and early dental instruments. Consequently, in 1900, he was appointed to the responsible post of Honorary Curator of the Odontological Museum, now housed in the Royal College of Surgeons, Lincoln's Inn Fields. To him, the College entrusted the care of John Hunter's invaluable dental collection. In 1916, he was admitted to the highly prized Fellowship of the Royal College of Surgeons of England.

In appreciation of his services as Honorary Curator of the Museum, the Section of Odontology of the Royal Society of Medicine elected him President in 1919; and, in 1922, founded the "Colyer Prize", which is awarded triennially for dental research.

In World War I, Colyer was Honorary Dental Surgeon to Croydon War Hospital, and to Queen's Hospital, Sidcup. His keen interest and marvellous results attained in restoring shattered jaws to more or less normality won for him world-wide recognition. As an outcome, he was, in 1929, created a Knight of the British Empire. In 1933, the University of Bristol conferred on him the degree of Doctor of Laws, *honoris causa*.

Early in his teaching career, Colyer recognized the need for a sound textbook on diseases and injuries of the teeth, consequently, in collaboration with Morton Smale, such a volume was published. It has passed through many editions, and later, when Evelyn Sprawson became co-author,

its title was altered to *Dental Surgery and Pathology*. Other contributions of Colyer's included: *Dental Disease in its Relation to General Medicine: Pathology of the Teeth of Elephants: John Hunter and Odontology: Dental Caries in Old World Monkeys: and Abnormal Conditions of the Teeth of Animals and their Relationship to Similar Conditions in Man*.

Sir Frank was among the first persons to receive the Fellowship of Dental Surgery of the Royal College of Surgeons of England. Many overseas dental societies were proud to add his name to their rolls of honorary members: in fact, only a few months ago *The American Society of the History of Dentistry* was the last to do so.

Colyer was, throughout his long life, a very keen sportsman, cricket being his favourite recreation. It was very rare for him to miss a match at Lords! Until two years ago, he was an active all-the-year-round golfer.

The writer knew Sir Frank well and experienced no greater pleasure than to spend time (which invariably passed too quickly) with him discussing the development and varieties of early dental instruments, on which he was the world's greatest authority; his knowledge was both profound and uncanny. In 1952, after a lifetime of research, he published *Old Instruments Used for Extracting Teeth*. There is not a dental library or a collector throughout the world but possesses a copy.

As befits every truly great man, Sir Frank was never at any time too busy to impart knowledge or guidance. On innumerable occasions the writer has corresponded with him on obscure points concerning old instruments. A reply was, not infrequently, forthcoming by return mail: his views being reinforced by citing German, French or Italian sources.

Sir Frank Colyer was unceasingly fair and generous in his outlook. If he were convinced of its justice, he never hesitated to sponsor a cause, however unpopular it might be among his *confreres*. He did much to ennoble the profession of dentistry, and his loss is irreparable.

J. Menzies Campbell,
Glasgow, W.2. F.I.C.D., F.R.S.E.

In Memoriam

Donald William Duncan. — Dr. Donald William Duncan of Petrolia, Ont., died on April 20th, at the age of 54.

Born in Moore Twp., Lambton Cty., Dr. Duncan received his early education at Petrolia High School. After graduating from the Royal College of Dental Surgeons in 1923, he practised in Petrolia until his death.

During World War II he served with the Royal Canadian Dental Corps, attaining the rank of Major, and since the war he was dental officer for the Sarnia garrison reserve forces.

Dr. Duncan was a member of the Masonic Order, the Lions Club, and the Petrolia Branch of the Canadian Legion; he was secretary of the Petrolia Horticultural Society, and at one time served on the local town council. Throughout his life he was a lover of sport, and was a keen supporter of local baseball activities.

Surviving Dr. Duncan are his wife, formerly Beatrice Collins; a son, Lorne, of Isle Maligne, P.Q.; and two daughters, Mrs. Ed. Bush of London, and Mrs. R. Wade of River Bend, P.Q.

Joseph Henry Atkins. — Dr. Joseph Henry Atkins of Toronto passed away on April 24, at the age of 64.

Born in St. Vincent, Ont., Dr. Atkins received his early education at Owen Sound. After graduating from the Royal College of Dental Surgeons in 1915, he practised in West Toronto for 38 years.

Dr. Atkins was a member of the Academy of Dentistry, Toronto, a Past Member of the General Mercer Lodge, A.F. and A.M., and also a member of High Park United Church and Antiquity Chapter, R.A.M.

He is survived by one daughter, Mrs. Hilliard Varty; and three brothers, Frederick

and Alfred of Owen Sound, and William of Peterborough.

John Vincent O'Shaughnessy. — Dr. John Vincent O'Shaughnessy of Hamilton died on April 9th after a short illness. He was 50 years of age.

Dr. O'Shaughnessy was born at Geneva, N.Y., and received his early education at the Cathedral High School. After graduating from the Royal College of Dental Surgeons in 1928 he practised in Hamilton until his recent illness. During the second World War he served as a Captain with the Royal Canadian Dental Corps.

Dr. O'Shaughnessy was a Past President of the Hamilton Dental Association, 1951-52.

He was a member of the St. John the Baptist Roman Catholic Church, and of the Knights of Columbus, the Hamilton District Officers' Institute and the Newman Club Alumni.

Surviving Dr. O'Shaughnessy are his wife, the former Adeline Knapp; one son, John Terrence; and two daughters, Maureen and Sheila.

Edward John Howe. — Dr. Edward John Howe of St. Catharines, Ont., died on April 16th, at the age of 66.

Born in Port Dalhousie, Dr. Howe received his early education in St. Catharines. In 1912 he graduated from the Royal College of Dental Surgeons, Ontario, practised in Toronto for two years, and then in St. Catharines until his death.

Dr. Howe was a member of St. Catherine of Alexandria Church, and of the Holy Name Society and Knights of Columbus. He belonged to the Niagara Peninsula Dental Association.

He is survived by his wife, Mary Teresa O'Hearn; a daughter, Mrs. Richard F. Berhalter of Thorold; and a son, Donald, of St. Catharines.

To The Members of the Class of 5T1

I wish to express my sincere appreciation to all the members of the Class of 5T1 for everything that was done for Frank while he was ill and for our son and myself since he passed away. The letters and cards Frank received while he was ill certainly did a lot to cheer him up, and all the flowers, letters, telegrams and telephone calls received at the time of his death were real evidence of the sympathy and thoughtfulness of you all.

I have received contributions from the Class and wish to thank each and every one of you for your kindness and generosity.

I knew that the Class of 5T1 was an exceptional one but I had no idea how really wonderful it was.

Many, many thanks.

Sincerely, Kay Croley
(Mrs. W. F. Croley), 157 Eagle Ave., Brantford, Ont.

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1954	St. Andrews-by-the-Sea, N.B.	September 5th-8th
1955	Toronto, Ontario.	May 15th-18th
1956	Banff, Alberta.	June 3rd-6th

Future Events

Date	Function	Location	Officer	Address
June 20-24	Berkshire Conference. Period. and Oral Pathology	Falmouth, Mass.	Dr. Irving Glickman	Tufts College Dental School, Boston, Mass.
July 6-9	American Dental Society of Europe	Paris, France	Mr. J. P. Maloney	110 Harley St., London W.1. England
Sept. 5-8	Canadian Dental Association & New Brunswick Dental Society Convention	St. Andrews by the Sea	Dr. S. K. Wetmore	146 Germain St., St. John, N.B.
Sept. 18	Convention of Northern Ontario Dental Association	North Bay	Dr. W. L. Boland	355 Ferguson St., North Bay, Ont.
Oct. 8	Dental Alumni Annual Meeting	Toronto	Dr. Ben Gross	816 Bathurst St., Toronto
Oct. 19-22	Montreal Dental Clubs' Annual Fall Clinic	Montreal	Dr. Bruce Ward	1414 Drummond St., Montreal, P.Q.
Nov. 6	American Academy of Gold Foil Operators	Miami, Fla.	Dr. Gerald Stibbs	School of Dentistry, University of Washington, Seattle 5, Wash., U.S.A.

Short Graduate Courses

Date	Course	Location	Address
July 12-16	Oral Pediatrics	Tufts College	Dr. Irving Glickman, Tufts College Dental School, Division of graduate and Postgraduate Studies, 136 Harrison Ave. Boston 11, Mass.
Sept. 9-10	Biennial Fall Refresher Course	University of Alberta, Edmonton	Dr. H. A. Grimsrud, University of Alberta, Faculty of Dentistry, Edmonton, Alta.
Jan. 23-Feb. 6 1955	Orthodontia	Temple University	Dr. Louis Herman, Director of Postgraduate Studies, Temple University School of Dentistry, 3223 North Broad St., Philadelphia 40, Pa.

Notices

New York University College of Dentistry announces a two year full time postgraduate course in Periodontia and Oral Medicine in preparation for certification and teaching. For information write: Secretary, Postgraduate Division, New York University College of Dentistry, 209 East 23rd St., New York 10, N.Y.

JOINT MEETING
THE CANADIAN DENTAL ASSOCIATION
THE NEW BRUNSWICK DENTAL SOCIETY
St. Andrews-by-the-Sea, New Brunswick

Board of Governors: Sept. 1-2-3-4, 1954

Convention: Sept: 5-6-7-8, 1954

ADVANCE REGISTRATION AND HOTEL ACCOMMODATION

The Registration Fee for the Profession is \$15.00. Advance Registration Fee will save delay. Assignment of accommodation will be made in the order of receipt of Registration Fee. Please REGISTER at the earliest possible date to retain your preferred position on the hotel reservation list.

C.D.A.—N.B.D.S. Convention Registration Form

Applicant

Name
(please print)

Address

Accommodation

..... Double Occupancy-Twin beds with bath.
..... Double Occupancy-Twin beds with running
water and shared bath with connecting
room.

Occupants:

..... (Name) (Address)

..... (Name) (Address)

If attending alone, would you, if possible, select another person to share your room.

An official confirmation and assignment of accommodation will be sent to you at a later date.

I expect to travel to St. Andrews-by-the-Sea by:

Auto

Train

Plane

Time of arrival at St. Andrews-by-the-Sea
(Time) (Date)

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Journal

DE L'ASSOCIATION DENTAIRE CANADIENNE

Disfonction temporo-mandibulaire

Quelques histoires de cas

par GEORGES PELLETIER, D.D.S., Montréal.

D'une manière générale, on considère aujourd'hui que la grande majorité des désordres de l'articulation temporo-mandibulaire sont attribuables à des désordres de l'occlusion des dents. (1-2-3-4-5.)

En examinant les muscles de l'appareil masticatoire, les structures articulaires et les relations qui existent entre les deux arcades dentaires, il est très souvent possible de reconnaître des disharmonies susceptibles d'expliquer les symptômes que manifeste le patient.

Plusieurs auteurs ont déjà étudié en détail les symptômes et l'étiologie de ces désordres. (2-6-7-8-9-10.) Nous reverrons brièvement ces deux sujets avant de parler du traitement et de décrire quelques cas cliniques.

Les disfonctions temporo-mandibulaires se manifesteront très souvent d'une manière chronique par des malrelations entre le ménisque et les structures osseuses de l'articulation. Il y a alors des craquements et des crépitations que l'on perçoit facilement à la palpation. Nous rencontrons aussi des subluxations;

lorsque les ligaments articulaires sont distendus, le condyle n'est plus limité dans son mouvement de translation vers l'avant. Il dépasse alors le bord antérieur du ménisque et va s'appuyer sur le versant antérieur de l'éminence articulaire. C'est alors que se fait entendre le bruit sec qui caractérise ces cas.

Le groupe des symptômes chroniques comprendra en plus certaines douleurs sourdes intermittentes qui irradieront parfois vers l'oreille, la tempe et la région occipitale.

Nous pouvons aussi rencontrer des manifestations pathologiques à caractère plus aigu qui prennent la forme d'une douleur vive et lancinante au côté du visage, principalement à la région articulaire. Ces douleurs ressemblent à celles que cause une dent incluse ou un abcès dentaire. Souvent l'inflammation qui a son origine à l'articulation, se propagera aux muscles de la mastication de sorte que les mouvements de la mâchoire seront réduits d'une manière considérable sans qu'il y ait toutefois ankylose des structures osseuses.

On pourra presque toujours attribuer ces symptômes à quelque disharmonie

présente dans l'occlusion. Pour en faciliter l'étude, nous classerons ces défauts en trois catégories:

1- Ceux qui obligent les structures articulaires à fournir un surcroît de travail. Chaque fois qu'il y a des contacts prématurés ou inégaux en occlusion centrique, ou que des cuspes nuisent dans des mouvements excentriques, les structures articulaires se trouvent forcées de fonctionner d'une façon anormale. Ceci entraîne, après un certain temps, les symptômes que nous avons décrits plus haut.

2- Il peut aussi y avoir fermeture excessive de l'occlusion. La mâchoire inférieure n'est arrêtée dans son mouvement de fermeture que plusieurs millimètres plus loin que la position de repos. La rotation excessive du condyle amène alors une distention de la capsule. C'est la pression du condyle sur le bord postérieur du ménisque qui explique les douleurs que nous rencontrons alors.

3- Thompson (4) décrit quelques cas où il y a déplacement postérieur de toute la mandibule avec pression sur les structures sensibles situées postérieurement au condyle. Ce déplacement assez souvent évident d'une manière clinique peut être illustré au moyen de tracés céphalométriques superposés.

Enfin mentionnons un dernier groupe de désordres qui peuvent être causés par le dentiste lui-même. Si l'occlusion a été élevée d'une manière exagérée au moyen de pièces de prothèse, complètes ou partielles ou d'onlays, et que le jeu interocclusal (free-way space) est oblitéré, il se manifestera une fatigue musculaire excessive et des douleurs vives dans la région articulaire.

Nous étudierons maintenant quelques cas qui illustrent ce que nous venons de voir et nous expliquerons de quelle manière il a été possible d'éliminer les symptômes en corrigeant le désordre de l'occlusion.

Cas No 1— Un patient d'une trentaine d'années se présente au bureau en se plaignant d'une douleur aiguë lancinante, ayant son origine dans la région du con-

dyle gauche. La douleur dure depuis vingt-quatre heures. L'examen radiologique a révélé qu'il n'y avait ni dent incluse, ni autre pathologie intra-orale.

La région du condyle est très sensible à la palpation, l'ouverture de la bouche est limitée à 15 millimètres et l'on ne note aucun mouvement antérieur du condyle gauche, seul le condyle droit est mobile.

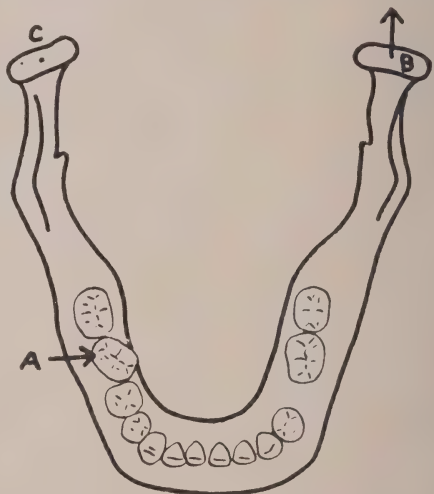


FIGURE 1. *Cas No 1.*—La deuxième molaire de droite s'est déplacée et fait un contact prématuré avec le haut. Il en résulte une force latérale appliquée en A. La mâchoire est forcée autour du point C, situé dans le condyle droit et le condyle gauche B est forcé en arrière.

La première molaire inférieure droite a été extraite vers l'âge de douze ans et la deuxième molaire, en se déplaçant mésialement pour venir en contact avec la prémolaire, a pris une inclinaison mésiale et toute sa crête marginale distale se trouve à dépasser le niveau du plan occlusal. Elle fait un contact prématuré avec la dent du haut.

Cliniquement, il est possible de voir que ce contact prématuré oblige le patient à déplacer légèrement la mâchoire vers la gauche afin de faire occlusion sur les autres dents. La mâchoire se déplace donc à gauche en tournant autour du condyle droit. Le condyle gauche est forcé à gauche et en arrière (figure 1) et fait pression sur les structures articulaires.

Ce déplacement est facilement éliminé en corrigeant l'occlusion centrique de façon à répartir le contact également sur toutes les dents. Le patient rapporta rapidement une diminution notable des symptômes. Il fallut cependant près d'une semaine avant que ceux-ci disparaissent complètement.

Il est intéressant de noter qu'à la deuxième visite il fut nécessaire de balancer à nouveau l'occlusion centrique qui avait été corrigée une semaine auparavant. Apparemment, lorsque les symptômes disparaissent, les structures articulaires qui au début étaient enflées reprennent leur forme normale. Ceci entraîne un léger changement dans l'occlusion. C'est pourquoi il nous apparaît nécessaire de vérifier l'occlusion centrique à deux ou trois reprises différentes au cours du traitement.

Cas No 2— Un patient de 22 ans se présente au bureau en se plaignant de la perte de l'acuité auditive de l'oreille gauche. L'examen des oreilles n'a révélé aucune pathologie et les traitements n'ont apporté aucune amélioration.

L'examen de la bouche révèle des tissus essentiellement normaux. Cependant l'occlusion est mutilée. A la suite de la perte des quatre premières molaires, il y a eu rotation et migration distale des prémolaires inférieures et déplacement mésial des molaires supérieures. En occlusion centrique, il n'y a que très peu de contact dans les segments postérieurs et aucun contact dans la région antérieure.

A la palpation, on perçoit un crépitement bilatéral de l'articulation temporo-mandibulaire. L'excursion condylienne est normale à droite, mais elle est nulle à gauche lors du mouvement d'ouverture. Les radiographies ne montrent que deux millimètres de déplacement antéro-inférieur de condyle gauche lors de l'ouverture. Il n'y a aucune ankylose et les surfaces osseuses sont bien délimitées.

L'excursion condylienne limitée indique toujours une inflammation au niveau de l'articulation temporo-mandibulaire. Les fluides inflammatoires peuvent drainer de la cavité articulaire jusque dans l'oreille

moyenne et dans certains cas affecter les facultés auditives.

Deux semaines après le début du travail de correction de l'occlusion, le patient rapporte une très légère amélioration de l'acuité auditive. Le condyle gauche est plus mobile, mais son excursion est encore limitée. Le crépitement persiste.

Le patient fut examiné à nouveau trois mois après le début du traitement. A ce moment l'excursion des deux condyles est parfaitement normale: ceux-ci terminent leur excursion juste au sommet de l'éminence articulaire. Les crépitements ne sont plus qu'occasionnels. Le patient rapporte une amélioration de ses facultés auditives que nous n'avons malheureusement pas pu contrôler d'une manière objective à l'audiomètre. L'acuité auditive reste cependant inférieure à la normale.

Cas No. 3— Un patient de 37 ans se présente au bureau dans le but de faire traiter une gingivite simple. Au cours de l'examen, nous remarquons qu'il y a subluxation bilatérale des condyles accompagnée d'un craquement bien marqué.

Plusieurs molaires manquent et les dents qui restent en place se sont déplacées mésialement. Les incisives inférieures font occlusion labialement aux incisives du haut comme dans les cas de malocclusion de classe III de Angle. Cependant le patient peut volontairement retirer la mâchoire inférieure vers l'arrière et amener les incisives du bas lingualement à celles du haut. Dans cette position, il n'y a aucun contact des dents postérieures. Miller (5) a décrit plusieurs cas semblables et leur a donné le nom de "fausse mésio-occlusion." Laisse à lui-même, le patient glisse la mandibule mésialement jusqu'à ce qu'il obtienne un contact occlusal suffisant. Il adopte ainsi une fausse occlusion centrique qui n'est dictée que par les contacts des dents. Si le patient recule les condyles à leur position normale dans la fosse glénoïde, il ne trouve aucun support occlusal et ne peut conserver cette relation. Par contre, si nous lui fournissons un support occlusal au moyen de couronnes et de pièces par-

tielles, il adoptera cette relation comme occlusion centrique sans jamais chercher à retourner à son ancienne position (Figure 2a, 2b). Les relations occlusales seront alors normales et les symptômes disparaîtront rapidement.



FIGURE 2, A. Cas No 3. Le pointillé indique la position de repos. Le patient avance la mandibule d'une manière anormale afin de trouver un support occlusal. Le condyle se trouve tiré vers l'avant dans la fosse glénoïde.

Cas No 4— Ce patient se plaint d'une certaine fatigue des muscles de la mastication. L'ouverture de la bouche est excessive: il y a 53 millimètres entre le bord incisif des centrales du haut et celles du bas. A la palpation, on note des craquements bilatéraux et une subluxation très marquée. Le patient en plus de mastiquer uniquement à droite a développé l'habitude nerveuse d'ouvrir brusquement la bouche de façon à faire sauter le condyle par-dessus le bord antérieur du ménisque en position de subluxation. Cette habitude distend progressivement les ligaments articulaires et devient un facteur étiologique plus important que les irrégularités de l'occlusion qui, en premier lieu, ont causé les désordres articulaires.

Deux mois après la correction de l'oc-

clusion, les craquements ont disparu, mais la subluxation persiste car le patient n'a pas réussi à se débarrasser de son habitude nerveuse. L'injection répétée de



FIGURE 2, B. Cas No 3. La zone hachurée indique l'espace qu'occupe l'appareil construit pour ce patient. La position du condyle est maintenant normale.

scélérosant à l'intérieur de la capsule articulaire limita le mouvement du condyle pour une période de cinq semaines. Après cela, la subluxation réapparut à cause de la traction que le patient exerce continuellement sur les ligaments articulaires en cherchant à faire sauter le condyle par-dessus le bord antérieur du ménisque. Ce cas, qui est un échec partiel, illustre la nécessité de contrôler tous les facteurs étiologiques si l'on désire obtenir un résultat durable. N'ayant pas contrôlé l'habitude du patient, nous n'avons obtenu que des résultats temporaires même en employant des thérapeutiques très énergiques.

Cas No 5— Une patiente de 25 ans se plaint de douleurs bilatérales sourdes et intermittentes dans la région articulaire. La douleur irradie aussi dans le cou et la tête. Toutes les dents postérieures manquent en haut et en bas et ont été remplacées par des pièces de prothèse. Le jeu

inter-occlusal est de 6 millimètres. Lors du mouvement de fermeture, le bord in-



FIGURE 3, A. Cas No 5. Le pointillé indique la position de la mandibule au moment où les incisives du bas font leur contact initial avec la surface linguale des dents du haut. Le condyle est en position normale.

La ligne solide indique la position que doit assumer la mâchoire du bas pour que les pièces partielles viennent en occlusion. Le condyle est forcé en haut et en arrière.

cisif des dents inférieures frappe la face linguale des dents du haut et force la mandibule à glisser en haut et en arrière avant que les pièces de prothèses n'entrent en occlusion. Ce déplacement pousse le condyle postérieurement et crée une zone de pression qui explique l'irradiation de la douleur (Figure 3A)

Pour traiter ce cas, il suffit de refaire les pièces de prothèse de façon à élever l'articulation tout en laissant un jeu inter-occlusal de 3 millimètres. Les pièces arrêteront la patiente dans le mouvement de fermeture avant que ne se produise le déplacement postérieur de la mandibule. (Figure 3, B).

Cas No 6— Cette patiente âgée de 21 ans était souffrante quand elle se présenta au bureau, le 5 juin 1953. Lorsqu'elle cherchait à ouvrir la bouche, elle ressentait une douleur qui était plus marquée du

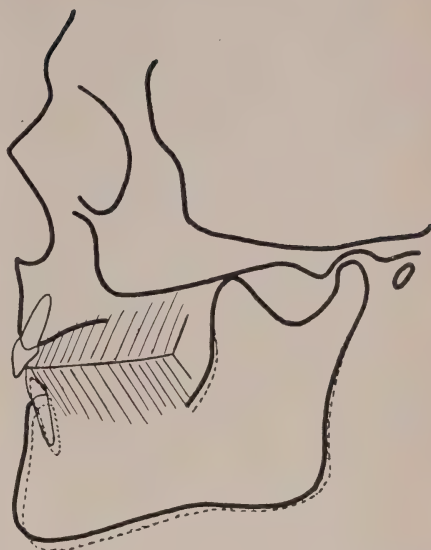


FIGURE 3, B. Cas No 5. La zone hachurée indique l'espace occupé par les restaurations partielles. Lorsque les incisives du bas font leur contact initial, les restaurations entrent aussi en contact. Il n'y a plus de déplacement distal du condyle. Le pointillé indique la position de repos.

côté gauche. Le mouvement d'ouverture était saccadé et il y avait déviation de la ligne médiane à gauche, puis à droite, puis de nouveau à gauche. Cette déviation était accompagnée de craquements très faciles à percevoir à la palpation. L'ouverture maximum était de 14 millimètres. Depuis deux mois, la patiente se soumettait à des traitements de physiothérapie sans obtenir de résultat.

L'examen intro-buccal ne révèle aucun déplacement de la mâchoire lors du mouvement de fermeture. Cependant l'occlusion est très irrégulière. A gauche en bas, les trois molaires sont absentes et la seconde prémolaire occupe à peu près la position de la deuxième molaire. Elle n'est pas en occlusion. Les prémolaires du haut et du bas à droite sont en torsoversion et se sont aussi déplacées distalement à la suite de la perte des premières molaires.

Une empreinte occlusale de cire révèle un contact excessivement fort dans la région des prémolaires, à droite.

Dès que l'occlusion eût été corrigée, les



FIGURE 4, A. Cas No 7. Le pointillé indique la position de la mandibule lors du contact initial des incisives du bas. La ligne solide indique la position assumée par la mâchoire du bas lorsque toutes les dents sont en contact. La zone hachurée P indique l'espace occupé par le premier appareil. Cet appareil empêche la fermeture au-delà de la position de contact initial.

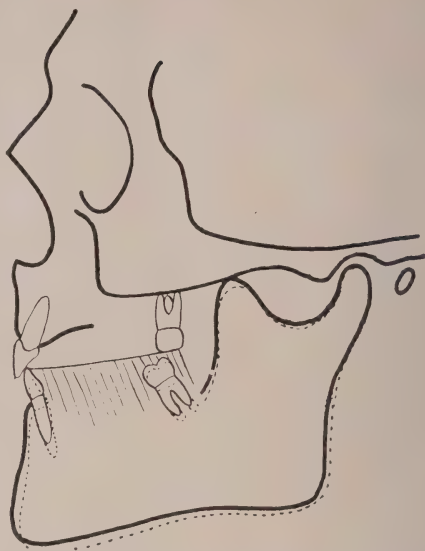


FIGURE 4, B. La zone hachurée indique l'espace occupé par le deuxième appareil. Les contacts occlusaux sont satisfaisants et le condyle est en position normale.

Le pointillé indique la position de repos. Pour passer de cette position à la position de contact occlusal, il y a simple rotation autour du condyle.

symptômes disparurent rapidement. Au bout de trois semaines, seul un léger crépitements bilatéral persiste. Toute déviation étant disparue à l'ouverture qui était maintenant de 32 millimètres. La patiente fut alors renvoyée chez son dentiste afin de faire remplacer les dents absentes. Il n'y eut aucun symptôme jusqu'au 13 novembre 1953, c'est-à-dire huit jours après que le partiel du bas eut été mis en bouche. L'examen révéla alors qu'un contact prématuré en latéralité gauche sur le partiel était responsable de la raideur musculaire qui était apparue. Depuis la correction de ce détail, aucun symptôme ne s'est manifesté.

Ce cas illustre bien la manière dont les patients ayant souffert de désordres temporo-mandibulaires sont hypersensibles à tout déséquilibre occlusal. Un contact prématuré qui serait négligeable dans un cas ordinaire peut provoquer des symptômes chez un patient dont les structures articu-

lares ont été affaiblies par des désordres antérieurs.

Cas No 7— Cette patiente (26 ans) se présente pour traitement, le 1er décembre 1953. Il y a douleur bilatérale intermittente depuis deux ans. La douleur est plus marquée du côté droit. L'ouverture de la bouche est limitée par une douleur vive. Si la patiente fait un effort et ouvre largement, il y a une subluxation bilatérale accompagnée de craquement.

En bas, les premières et deuxième molaires manquent de chaque côté et les troisièmes molaires ont une très forte inclinaison mésiale. Une prémolaire et une molaire manquent en haut à droite. L'alignement des autres dents postérieures est irrégulier. Les incisives et canines du haut suivant un plan occlusal situé 3 millimètres plus bas que celui des dents postérieures et couvrent complètement les dents du bas lorsque la patiente est en occlusion.

L'analyse fonctionnelle révèle un déplacement distal de la mandibule à la fermeture. Les incisives inférieures frappent le plan lingual des dents du haut et glissent vers l'arrière et vers le haut. Il résulte une zone de pression distalement aux deux condyles. (Figure 4,A)

Le 15 décembre, on met en bouche un appareil de plastique couvrant le palais et le talon des incisives du haut. Lors de la fermeture, les incisives du bas appuient sur la plaque juste au moment où elles font leur contact initial avec le plan lingual des dents du haut. Il n'y a plus possibilité de déplacement distal de la mandibule, mais il reste un espace entre les dents postérieures.

Le 20 janvier, tout craquement et subluxation ont disparu. Occasionnellement, la patiente ressent de la douleur dans la région articulaire. Cependant elle se plaint d'une fatigue des muscles de la mastication. C'est le manque de contact dans la région des molaires qui est responsable de cet état de choses.

Le 3 février, l'on met en bouche un appareil temporaire recouvrant les dents du bas de façon à occuper tout l'espace libre indiqué par la zone hachurée sur la figure (4,B). L'occlusion est bien ajustée. Cet appareil fournit du contact occlusal dans la région des molaires et par là même empêche tout déplacement anormal de la mâchoire. Depuis ce temps, les symptômes qui subsistaient sont disparus. Cet appareil temporaire sera maintenant remplacé par des restaurations plus permanentes.

Ce cas illustre d'abord les effets pathologiques d'un déplacement postérieur de la mandibule sur les structures temporo-mandibulaires. Nous voyons en plus qu'il est indispensable de fournir à ces patients des contacts occlusaux complets et équilibrés, si nous voulons obtenir des résultats adéquats. L'élimination d'un seul facteur étiologique n'apporte pas d'amélioration satisfaisante.

CONCLUSIONS

- 1- Bon nombre de désordres temporo-mandibulaires ont leur origine dans une occlusion fautive.
- 2- L'analyse fonctionnelle de l'occlusion permet de découvrir les causes de ces désordres.
- 3- La restauration de l'occlusion à un état aussi parfait que possible amène la rémission des symptômes dans un laps de temps assez court.

BIBLIOGRAPHIE

- 1) Markowitz, H. A. and Gerry, R. G.: Temporo-mandibular joint diseases. *Oral Surg., Oral Med., and Oral-Path.* 2: 1309-1337. Oct. 1949; 3: 75-117 Jan. 1950.
- 2) Pelletier, Georges. Désordres de l'articulation temporo-mandibulaire et occlusion. *J.C.D.A.* 19 - Février 1953.
- 3) Schweitzer, J. M. Oral rehabilitation. St-Louis. Mosby 1951. p. 499-500.
- 4) Thompson, J. R. Temporo-mandibular disorders; diagnosis and dental treatment—chapitre dans Sarnat B.G. The temporo-mandibular joint. Springfield Thomas 1951.
- 5) Miller, S. C. Textbook of Periodontia. Philadelphia. Blackiston 1950. P. 438.
- 6) Sarnat, B. G. The temporo-mandibular joint. Springfield-Thomas 1951.
- 7) Schweitzer, J. R. Oral rehabilitation. St-Louis Mosby 1951.
- 8) Ricketts. Diagnostic use of Laminography. *J.A.D.A.* 45 No. 6 June 1953. P. 620.
- 9) Weinman, J. P. et Sicher, H. Pathology of the temporo-mandibular joint. Chapitre de Sarnat, B. G. The temporo-mandibular joint. Springfield Thomas 1951.
- 10) Brodie, A. G. Diagnosis of the abnormal temporo-mandibular joint conditions. Chapitre de Sarnat, B. G. The temporo-mandibular joint. Springfield Thomas 1951.

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Nouvelles de l'Association

Remarques au sujet des statistiques sur le nombre des dentistes canadiens pour l'année 1954

Depuis qu'on établit des statistiques sur le nombre des dentistes au Canada, on a choisi l'année 1933 pour fins de comparaison. Si on compare l'augmentation du nombre des dentistes dans chaque province, on constate de grosses différences. On saisit mieux ces différences, si on compare la proportion des dentistes par rapport à la population en 1933 et celle de cette année.

On a retranché Terre-Neuve, parce qu'on ne possède pas sa proportion pour 1938. Quatre provinces ont maintenu leurs positions et l'ont même quelque peu améliorée; tandis que dans cinq provinces, la proportion s'est aggravée. Il ne semble pas y avoir de rapport entre les provinces qui ont subi un accroissement considérable de population et en même temps une augmentation du nombre de dentistes. Par exemple, entre les années 1938 et 1953, le pourcentage de

l'augmentation de la population est pratiquement le même pour l'Ontario et Québec, tandis qu'en Combie britannique, ce pourcentage est beaucoup plus considérable que dans ces deux provinces. L'examen de la proportion de dentistes en rapport avec la population durant cette période révèle que la province de Québec a amélioré sa proportion tandis que l'Ontario et la Colombie britannique, quoique leur population ait augmenté plus que dans n'importe quelle province, se sont maintenues au même niveau.

	Proportion pour 1938	Proportion pour 1953
I. du P.-E.	1/3133	1/3118
N.-E.	1/3242	1/3348
N.-B.	1/4045	1/4621
Qué.	1/3629	1/3353
Ont.	1/1962	1/2206
Man.	1/2668	1/3088

Sask.	1/4481	1/4005
Alta.	1/3317	1/2701
C.-B.	1/2102	1/2132

On peut se tromper si on ne regarde que les chiffres de base. Les modifications des conditions économiques et l'importance plus grande que le public accorde à l'hygiène dentaire constituent des facteurs qui ne sont pas représentés dans les statistiques. En 1953, le nombre des dentistes canadiens a augmenté de 83. Comme le montraient les chiffres au sujet des étudiants, on peut s'attendre à une diminution dans le nombre des nouveaux diplômés. Si le nombre des décès et des retraites se maintient au même niveau, on peut s'attendre à une augmentation plus restreinte du nombre des dentistes en 1955. La population augmente rapidement et la situation devient critique. La seule façon d'augmenter efficacement le nombre des dentistes est de procurer aux universités les moyens de recevoir plus d'élèves.

TABLEAU I
CHIFFRES STATISTIQUES AU SUJET DU NOMBRE DES DENTISTES, AU CANADA
(tels que rapportés par les registraires provinciaux en janvier 1954)

Province	Nombre de dentistes rapporté durant 1953						Augmen- tation ou diminution totale 1938*	Proportion du nombre des dentistes en rapport avec le chiffre de la population
	Hommes	Femmes	Totaux	Morts	Retraites	Additions		
T.-N.	30	2	32	0	0	8	+14	1/11969
I. du P.-E.	34	0	34	0	0	1	+4	1/3118
N.-E.	195	3	198	7	3	11	+29	1/3348
N.-B.	116	0	116	2	0	5	+6	1/4621
Québec.	1269	4	1273	22	10	63	+399	1/3353
Ontario.	2194	26	2220	17	11	75	+288	1/2206
Manitoba.	261	1	262	0	2	9	+11	1/3088
Saskatchewan.	213	2	215	0	1	10	+5	1/4005
Alberta.	366	5	371	0	2	23	+135	1/2701
C.B.	572	5	577	8	3	32	+215	1/2132
Total.	5250	48	5298	56	32	237	+1086	1/2790

Les chiffres des populations utilisés sont ceux publiés par le Bureau fédéral de la Statistique pour juin 1953.
*Les chiffres des augmentations ou des diminutions comparés à ceux de l'année d'avant-guerre 1938 sont alignés pour fins de comparaison.

TABLEAU II
MIGRATION DES DENTISTES CANADIENS DURANT 1953

A:	T.-N.	I.-du- P.-E.	N.-E.	N.-B.	Qué.	Ont.	Man.	Sask.	Alta.	C.B.	Yukon	E.-U.	Angl.
De T.-N.	0	0	0	0	0	1	0	0	0	0	0	0	0
I.-du-P.-E.	0	0	0	0	0	0	0	0	0	0	0	0	0
N.-E.	0	0	0	0	0	0	0	0	0	0	0	0	0
N.-B.	0	0	0	0	0	0	0	0	0	0	0	0	0
Qué.	0	0	0	0	0	3	0	0	0	0	0	0	0
Ont.	1	0	0	1	0	0	2	0	2	4	0	1	2
Man.	0	0	0	0	0	0	0	0	0	0	0	0	0
Sask.	0	0	0	0	0	0	1	0	1	3	0	0	0
Alta.	0	0	1	0	0	1	0	1	0	2	1	0	0
C.B.	0	0	0	0	0	0	0	0	1	0	0	1	0

TABLEAU III
NOMBRE DE SPECIALISTES, PAR PROVINCE
 (Seuls les dentistes, qui consacrent tout leur temps à l'exercice de leur spécialité.)

	T.-N.	I. du P.-E.	N.-E.	N.-B.	Qué.	Ont.	Man.	Sask.	Alta.	C.B.	Total
Chirurgie (Exodontie).....	0	0	1	0	3	27	4	0	3	6	44
Orthodontie.....	0	0	1	0	14	36	4	1	4	6	66
Périodontie.....	0	0	0	0	2	15	1	0	1	2	21
Pédodontie.....	0	0	0	0	2	4	2	0	0	4	12
Total.....	0	0	2	0	21	82	11	1	8	18	143

TABLEAU IV
NOMBRE DE DENTISTES EMPLOYES DANS LES SERVICES DE SANTE, DANS LES PROVINCES
 en janvier 1954

	T.-N.	I. du P.-E.	N.-E.	N.-B.	Qué.	Ont.	Man.	Sask.	Alta.	C.B.	Total
Ecoles dentaires: (Personnel enseignant)											
plein-temps.....	0	0	2	0	9	11	0	0	2	0	24
demi-temps.....	0	0	0	0	15	6	0	0	18	0	39
Service hospitalier:											
plein-temps.....	0	0	3	2	0	29	0	3	4	6	47
demi-temps.....	0	0	0	1	0	4	0	0	0	3	8
Service scolaire:											
plein-temps.....	0	0	1	0	14	17	2	1	3	20	58
demi-temps.....	0	0	3	3	6	57	2	1	3	2	77
Service d'Hygiène publique:											
plein-temps.....	0	3	3	1	1	14	7	7	0	9	45
demi-temps.....	0	0	0	0	6	0	0	0	0	0	6

TABLEAU V
NOMBRE TOTAL DES DENTISTES EMPLOYES PAR LE GOUVERNEMENT FEDERAL
 en janvier 1954

Ministère des Affaires des Vétérans.....	40
Ministère de la Défense nationale.....	153
Ministère de la Santé nationale et du Bien-Etre social.....	10
Total.....	203

Nouvelles

—Les membres de la profession dentaire de Grande Bretagne ont offert un dîner en l'honneur de Sir Wilfred et de Madame Fish, le 2 avril, à Londres. Le docteur Fish avait été honoré par la Reine à l'occasion de la nouvelle année. Il avait été président du Collège des Chirurgiens-Dentistes d'Angleterre durant les dix dernières années.

—Le docteur J. H. Johnson, de la faculté de chirurgie dentaire de l'Université de Toronto, a reçu la médaille Thomas P. Hinman à la réunion Thomas P. Hinman, tenue à Atlanta, Georgia, en mars 1954. Le docteur Johnson était le conférencier à cette réunion. Cette médaille est offerte à des individus, qui se distinguent dans le domaine de la dentisterie.

—A une élection complémentaire tenue récemment, le docteur Rodolphe Leduc, de Maniwaki, a été élu député fédéral du comté de Gatineau. Cinq dentistes font maintenant partie de la députation à Ottawa.

Acquisitions récentes de la bibliothèque

A.D.A. COUNCIL ON DENTAL THERAPEUTICS—Accepted Dental Remedies. 1954. 207p.
 ANDERSON, W. A. D. Synopsis of pathology. 3rd ed. 1952. 788p. illus.
 BOLL, M. Physique appliquée à l'art dentaire. 1952. 308p. illus.
 BOYD, W. Textbook of pathology, 6th ed. 1953. 1024p. illus.
 CHILTON, N. W. Analysis in dental research. 1953. 216p.
 CHOKSEY, K. M. Dentistry in Ancient India. 1953. 85p. illus.
 CHRISTIAN, H. A. The principles and practice of medicine. Originally written

- by William Osler. 16th ed. 1947. 1539p. illus.
- GREAT BRITAIN. Handbook for Royal Naval Dental Surgery Attendants. 1949. 146p. illus.
- HAM, A. W. Histology. 2nd ed. 1953. 866p. illus.
- HARTSOOK, J. T. and WILBUR, H. M. Dentistry for children. A post-graduate course in dentistry for children. 1947. 75p. illus.
- HEMLEY, S. Orthodontic Theory and Practice. 2nd rev. and enl. ed. 1953. 591p. illus.
- HORSLEY, G. W. and BIGGER, I. Operative surgery. Two volumes. 6th ed. 1953. 1579p. illus.
- JAMES, J. Dental Local Anaesthesia. 1929. 126p. illus.
- LEDERLE, Labs. The nutritional and clinical significance of folic acid. 1950. 121p.
- MACDONALD, J. B. The motile non-sporulating anaerobic rods of the oral cavity. 1953. 95p.
- MERCK & CO. INC. The Merck Index of chemicals and drugs. An encyclopedia for chemist, pharmacist, physician and allied professions. 1952. 1167p. illus.
- MONTGOMERY, G. L. Pathology for students of dentistry. 1953. 305p. illus.
- NACHMANSOHN, D. ed. Nerve impulse. Transactions of the first Conference on problems of nerve impulse. 1950. New York. 159p. illus.
- ORBAN, B. ed. Oral histology and embryology. 3rd ed. 1953. 364p. illus.
- PRATT, R. and DUFRENOY, J. Antibiotics. 2nd ed. 1953. 398p. illus.
- PRINZ, H. and GRENBAUM, S. S. Diseases of the mouth and their treatment 1939. 670p. illus.
- PRINZ, H. Diseases of the soft structures of the teeth and their treatment. 2nd ed. rev. 1937. 500p. illus.
- SCHOUR, I. Noyes' oral histology and embryology. 7th ed. 1953. 448p. illus.
- SCHWARTZ, J. R. Inlays and Abutments. 1953. 478p. illus.
- SMILEY, D. and GOULD, A. G. Your community's health. 1952. 454p. illus.
- STRENGER, F. Biting force in man; measurements under conditions of physiological free way space between the teeth. 1949. 90p. illus.
- ASCHER, F. Prognathie; ihre kieferorthopädische, chirurgische und prothetische Behandlung. 1951. 45p. illus.
- BURLINGHAM, R. The odyssey of Modern Drug Research. 1951. 124p. illus.
- COEHLO, D. H. A complete fixed bridge procedure. 1949. 129p. illus.
- FLOREY, M. E. Clinical application of antibiotics, (Penicillin). 1952. 730p. illus.
- GOLDMAN, H. M. Periodontia, 3rd ed. 1953. 790p. illus.
- GOLDMAN, L. B. Fundamentals of clinical cancer with emphasis on early diagnosis and treatment. 1953. 312p. illus.
- HARDY, J. D., WOLFF, H. G. and GOODELL, H. Pain sensations and reactions. 1952. 435p. illus.
- HEPPLE, G. H. X-Rays in dental practice. 1952. 120p. illus.
- LANGTON, C. V. and ANDERSON, C. L. Health principles and practice. 1953. 417p. illus.
- LAZAREVITCH, I. La médecine en U.R.S.S. 1953. 217p.
- LENDLE, L., und WEIGMANN, R. Pharmakologie. 1953. 160p. illus.
- MUHLER, J. C., HINE, M. K. and DAY, H. G. Preventive dentistry. 1954. 336p. illus.
- SAKLAD, M. Inhalation therapy and resuscitation. 1953. 343p. illus.
- SWENSON, M. G. Complete dentures. 3rd ed. 1953. 735p. illus.

Nouvelles de l'Université de Montréal

La Faculté représentée à l'étranger

Le docteur Paul Geoffrion, chef du service d'orthodontie et vice-doyen de la faculté de chirurgie dentaire, a été invité à donner des cours et des cliniques à Paris, France, et à Istamboul, Turquie, durant les mois de juin et juillet, cet été.

Cours post-universitaires

Un grand nombre de dentistes a suivi les cours post-universitaires offerts durant l'année aux praticiens dans les différents services de la faculté. Une formule, qui s'avère des plus populaires, consiste dans les cours du soir, où les dentistes peuvent rafraîchir leur science, tout en travaillant à leur cabinet, le jour.

Cinquantenaire de la fondation de la faculté

Un comité vient d'être nommé pour organiser la célébration du cinquantenaire de la fondation de la faculté de chirurgie dentaire.

Cette fête prendrait la forme d'une journée passée dans les nouveaux locaux de la montagne où seraient présentées des conférences et des cliniques et où seraient honorés des dentistes, qui ont rendu des services signalés à la profession et au public. Le tout se terminerait par un buffet où seraient invitées épouses des anciens élèves de la faculté.

Cette réunion aurait lieu en octobre prochain.

Visite des parents des élèves à la faculté

Les autorités de la faculté de chirurgie dentaire ont invité récemment les parents des élèves actuels à visiter les locaux, où travaillent leurs enfants et à rencontrer les professeurs qui leur enseignent.

Un groupe imposant de parents ont répondu à l'invitation et ont été grandement intéressés par leur visite.

Finissants de 1954

Voici la liste des finissants de cette année et l'endroit où ils comptent établir leur bureau:

Bédard, Aldéric, Québec; Bellehumeur, Claude, Abitibi; Bergeron, Jean-Guy, Montréal; Brunelle, Roger, Montréal; Dansereau, André, Montréal; Filiatrault, Pierre-Paul, Armée; Fiset, Jacques, Montréal; Fortin, Gérard, Giffard, Qué.; Gareau, Jean, Iberville; Goulet, Charles-E., Sherbrooke; Grégoire, Roger, Cantons de l'Est; Haynemand, Lucien, Montréal; Jean, Paul, Québec; Lafrenière, Gaston, Ottawa; Lussier, Louis G., Montréal; Mazzacane, Mario, Connecticut, E.-U.; Mongeau, Raynald, Vaudreuil; Rauch, Edward, Montréal; Vallée, Clément, Québec; Venne, Jacques, Montréal.

Visite des étudiants de McGill

A l'occasion de la fête de Ste-Apolline, la conférence Bourdon des étudiants de la faculté de chirurgie dentaire de l'Université

de Montréal a reçu les élèves de l'Université McGill, à la faculté.

Après avoir pris le souper ensemble à la cafétéria, les étudiants des deux universités de Montréal ont visité les locaux de la faculté de chirurgie dentaire et ont assisté ensuite à la projection d'un film récréatif. Des rencontres entre futurs confrères sont de nature à développer un esprit de collaboration et de bon voisinage des plus souhaitables et ce groupe de futurs dentistes s'est séparé en se promettant de se revoir plus souvent pour des échanges de vues profitables à tous. La présence des épouses et des amies des étudiants a contribué à donner à la fête un cachet de distinction et de camaraderie de bon aloi.

Réunions pédagogiques du personnel enseignant

Les réunions de février et d'avril du Comité pédagogique du corps professoral de la faculté ont fourni à celui-ci l'occasion d'entendre deux conférenciers éminents dans chacune de leur sphère respective: le R. P. Henri Samson, S. J., M. D., qui, traita de "Psychothérapie en chirurgie dentaire" et M. René Guénette qui exposa les "Grands principes de pédagogie."

Ces réunions, qui ont lieu quatre fois par année, regroupent tous les professeurs et tous les cliniciens pour qu'ils puissent discuter de l'enseignement donné à la faculté. Par la même occasion, ils peuvent entendre des maîtres de la pédagogie ou de domaines connexes à l'enseignement leur faire part de leur connaissances et de leur expérience.

Propos sur les sinusites d'origine dentaire

par le DOCTEUR CROCQUEFER, Paris

Les sinusites maxillaires d'origine dentaire sont relativement peu fréquentes, en comparaison des sinusites maxillaires d'autre origine; nous les voyons d'ordinaire au cours des événements suivants:

Il s'agit d'un patient qui est allé consulter un oto-rhino-laryngologiste parce qu'il mouchait du pus ou bien parce qu'il faisait des laryngites et des rhino-pharyngites à répétition.

L'examen du méat moyen révélant quelquefois la présence d'un peu de pus, la praticien constatant une absence de translucidité du sinus, en arrive à pratiquer une ponction et un lavage explorateurs qui révèlent la présence de pus et par con-

séquent d'une sinusite maxillaire qui est confirmée par la radiologie.

Il pratique quelques ponctions journalières suivies de lavages de Dakin, la supuration sinusienne diminue, mais ne disparaît pas, et alors, l'interrogatoire ne lui ayant pas révélé, comme mode de début, que la sinusite a commencé par un coryza, il songe aux dents, examine l'arcade dentaire et nous adresse le patient en nous demandant si, à notre avis, il n'existe pas dans la bouche du malade, une dent mortifiée capable de provoquer une sinusite, insistant pour que nous en débarrassions la bouche du patient. Voilà le point de vue du médecin-oto-rhino-laryngologiste. Quelle conduite devons-nous tenir?

Il est bien évident qu'une dent cariée, provoquant des accidents péri-apicaux, créant un foyer d'ostéite du plancher du sinus, ayant provoqué des lésions de la muqueuse, doit être délibérément sacrifiée. Mais, s'il s'agit d'une grosse molaire ou d'une prémolaire non douloureuse à la percussion, n'ayant jamais présenté d'accidents inflammatoires, dont les canaux semblent normalement obturés, nous pouvons avoir quelque hésitation, car le sacrifice d'une dent sera définitif, elle ne repoussera pas et son absence peut influencer sur l'avenir prothétique du malade, nécessitant un appareil mobile là où un appareil fixe aurait pu se trouver indiqué.

Ces indications posées, nous allons procéder à l'examen de notre malade et voir quels moyens nous avons à notre disposition pour déceler qu'une dent est ou n'est pas la cause d'une sinusite maxillaire.

Quelles sont les dents dont l'apex se trouve en rapport avec le plancher du sinus? Par ordre de fréquence, nous trouvons: la 2e prémolaire supérieure, la 1ère grosse molaire, la 2e grosse molaire, la 1ère prémolaire, la canine et enfin la dent de sagesse. L'examen intra-buccal, la recherche des réactions électriques et thermiques, la palpation périapicale de la dent, la percussion, tant verticale que latérale, nous diront bien s'il existe une dent morte qui pourrait être justiciable de l'accident sinusien, mais dans quelle mesure? C'est là tout le drame.

En effet, si nous sommes en présence d'un sujet dont les procès alvéolaires se sont mal développés, s'il s'agit d'un rétrognathe maxillaire, il y a bien des chances pour que les dents sinusiennes aient leurs apex saillants au niveau du plancher du sinus et n'en soient séparées que par une très mince lamelle osseuse, disposition anatomique qui favorise évidemment l'évolution des accidents dentaires vers la muqueuse sinusienne. Mais il en va tout autrement si nous sommes en présence d'un sujet normalement constitué chez lequel on est en droit de supposer un espace d'un ou deux millimètres entre l'ex-

trémité de la racine et de la muqueuse sinusienne. Et pour déterminer cet espace, de quels moyens allons-nous disposer? Uniquement de la radiographie. En théorie, on devrait pouvoir trouver le plan axial de la dent qui permettrait de déterminer l'incidence du rayon X capable de faire cette discrimination.

En fait, dans la pratique, il en va tout autrement et l'opération devient extrêmement difficile si ce n'est impossible, même à la télé-radiographie.

Le sinus est une cavité sphéroïde, la dent peut avoir plusieurs racines, comment, dans ces conditions, trouver le ou les plans permettant d'évaluer la plus courte distance entre les apex et la cavité sinusienne?

En réalité et dans la pratique courante, on en arrive donc à décider de mutiler le patient parce que l'on suppose qu'une dent peut être la cause des accidents sinusiens. C'est une mutilation définitive. D'autant plus, comme nous le verrons tout à l'heure par l'observation citée, qu'il n'est pas certain, par ce procédé, d'obtenir la guérison. Au lieu d'opérer à l'aveuglette ou dans une demi-certitude, ne serait-il pas plus simple d'essayer de nous rendre compte s'il existe un procédé capable de contrôler visuellement le fait que la racine de la dent est bien la cause de l'infection sinusienne?

Et ce procédé, c'est la trépanation du sinus au niveau de la fosse canine qui nous permettra de jeter directement un coup d'oeil sur le plancher, d'en contrôler les lésions d'ostéite, de faire le traitement de la sinusite maxillaire, surtout si sa chronicité a fait apparaître des bourgeons inflammatoires que seul le curettage pourra amener à guérison. Et il est bien entendu que cette intervention se terminera par un Caldwell-Luck, seule technique opératoire précise nous mettant à l'abri des complications ultérieures et des récidives.

Nous sommes donc bien catégoriques dans l'opinion que nous venons de dé-

fendre. En présence d'une sinusite maxillaire d'origine dentaire, nous devons en faire l'intervention exploratrice par la fosse canine, contrôler les lésions de la dent causale sur le plancher si elles existent, et à ce moment-là, seulement, la sacrifier et terminer notre intervention par un Caldwell-Luck.

Afin de ne pas alourdir ma communication, j'ai choisi tout juste deux observations qui m'ont paru parfaitement démonstratives et que je vais vous exposer.

1re observation: Madame G. nous est adressée en 1941 par un de nos confrères de la rue Caumartin, actuellement décédé. Elle se plaint d'une sinusite maxillaire qui a été contrôlée, que le médecin oto-rhino-laryngologiste pense être d'origine dentaire et l'on tient pour responsable une dent de six ans supérieure gauche.

Suivant la technique décrite dans le Laurens, la dent est extraite: comme son alvéole communique avec le sinus, on élargit cet orifice bucco-sinusal. La malade est opérée le 12 janvier, on institue des lavages au Dakin et des inhalations. Le 24, elle va mieux. Le 20 mars, tout est fini. La malade est guérie, si bien guérie qu'au mois de juillet 1942, on peut lui faire un bridge s'appuyant sur la 2e grosse molaire et la 2e prémolaire dont les soins ont été très correctement exécutés et contrôlés.

Tout va très bien, lorsque le 28 janvier 1952 c'est-à-dire deux ans après la première intervention la malade mouche du pus, va consulter son médecin oto-rhino-laryngologiste, qui diagnostique une sinusite maxillaire gauche et qui me demande si une quelconque des dents qui supportent le bridge ne serait pas la cause de l'accident.

Je lui réponds que ces dents ont été convenablement traitées, je l'engage à opérer la malade et lui dis que j'assisterai à l'opération, me tenant à sa disposition pour extraire la dent causale si jamais on pouvait la déterminer après l'ouverture du sinus dans la fosse canine. Position prudente car le plancher du sinus, au moment de l'intervention, ne présentait absolu-

ment aucune lésion, le bridge fut donc laissé en place.

2e observation: Le 6 décembre 1951, le jeune R. . . , 20 ans, fils d'un instituteur de Seine-et-Marne, vient me consulter parce qu'il présente une sinusite maxillaire d'origine dentaire, dit son oto-rhino-laryngologiste.

L'examen de la bouche et une radio pratiquée permettent de déceler une dent de six ans dont les apex sont déhiscentes au niveau du plancher du sinus, les canaux non soignés et qui avait donné auparavant lieu à des poussées inflammatoires.

On décide le sacrifice de cette dent qui est enlevée séance tenante, ce qui permet de vérifier que l'alvéole de la dent est en communication avec la cavité sinusal et ce qui vient confirmer le diagnostic.

On institue des lavages et des inhalations; la sinusite traîne et ne guérit pas, si bien que le malade qui en était porteur depuis plusieurs années, à telle enseigne que cette sinusite avait été la cause d'une sinusite frontale, est dans l'obligation de se faire opérer pas la fosse canine et l'on constate alors des bourgeons inflammatoires nombreux, résistants, nous indiquant bien qu'une pareille sinusite n'aurait pas cédé à de simples lavages.

Ces deux observations viennent donc illustrer ce que nous affirmions au début de cet article. D'une part, qu'une sinusite imputée d'origine dentaire peut très bien ne pas l'être et obliger à l'intervention par la fosse canine.

D'autre part, qu'une sinusite d'origine dentaire indubitable peut très bien ne pas guérir par l'extraction pure et simple de la dent et qu'alors, il est nécessaire d'opérer encore par la fosse canine.

En définitive, en présence d'une sinusite d'origine dentaire, le minimum de mutilation et le maximum de sécurité nous seront donnés par l'intervention au niveau de la fosse canine.

Il faut donc opérer.



Vue à vol d'oiseau de l'Hôtel Algonquin, à St.-André-sur-Mer. Au premier plan, on aperçoit le Casino où seront présentées les conférences et les cliniques durant la journée; le soir, cet édifice abritera les réunions sociales du Congrès, telles que les danses, etc.

**REUNION CONJOINTE de
L'ASSOCIATION DENTAIRE CANADIENNE
et de la SOCIÉTÉ DENTAIRE DU NOUVEAU-BRUNSWICK
les 5, 6, 7, 8 septembre 1954**

Enregistrez-vous dès maintenant

Les chèques et les mandats au montant de \$15.00 (frais d'inscription) doivent être faits payables à la Société dentaire du Nouveau-Brunswick et adressés au docteur S. K. Wetmore, secrétaire au Comité du Congrès, 177 rue Germain, St-Jean, N.-B. On peut réserver ses chambres par la même occasion.

Journal

OF THE CANADIAN DENTAL ASSOCIATION

Dental infection in relation to general health*

by JOHN W. CLAY, D.D.S., F.A.C.D., Calgary.

Forty or fifty years ago there was not the slightest recognition of infection in the mouth having any relation to the health of the individual, except when accompanied by severe pain and perhaps elevated temperature.

Neither physician nor dentist was concerned with the chronic infections which were all too common in the mouths of most of their patients. The dentist was intent on preserving teeth as long as there was function and good appearance. Most physicians were not interested in teeth at all. Slight changes in the appearance of the dorsum of the tongue were noted, but old decayed roots and bleeding and markedly infected gums were ignored.

In 1911, Hunter from England awoke the medical and dental professions of this continent to the marked pathology in the mouths of most of their patients. He was firmly convinced that an infected mouth had a harmful influence on general health and on the ability of patients to

recover from disease.

As a result of this, there grew rapidly a belief that many illnesses were caused by absorption of dental infection through the blood stream or directly into the digestive system. Headed by men such as Rosenow at Rochester, the theory of "elective localization" was received and believed and for many years there was a mass attack on teeth as the prime cause of many of the ills of mankind.

Not suddenly, as it began, but slowly, opinion has changed again. In these later years more and more articles, most of them being merely the expression of opinions and not backed by research, have filled the Journals with the view that dental infections are of no importance to the health of the individual. These writers take us back in full circle to the views of fifty years ago. There is this difference. At that time the condition was unknown, now it is known, but unlike any other part of the body, the mouth and its health are being frequently treated as a thing apart from the patient and of no importance.

Here are two diametrically opposite views. Many of the men in practice today

* Presented to Calgary General Hospital Medical Staff — November, 1953.

have passed through a period of practice when they paid great attention to, and believed in, dental infection as an important source of ill health, and now they are ignoring the whole business completely.

One or the other, or both, of these viewpoints must be wrong. I believe they are both wrong. May I suggest that the truth lies somewhere between the extremes and in middleground.

It occurs to me that those who held the view that dental infections were frequently responsible for various illnesses, and have altered their views, must have done so with, at times, considerable regret. Not so many years ago when a source of illness could not be found, it was very convenient to have the persistent patient visit his dentist and have dental infections removed. It must have been a relief, or at least a respite from the troublesome problem. There was always the chance of the condition clearing itself, or developing more definite symptoms, or perhaps the cleaning up of the infection in the mouth might help the patient make a recovery. In any case the physician and dentist benefited whether the patient did or not.

In the next few minutes I should like to review the subject briefly, and present a middle ground statement outlining what I feel is a reasonable position to take.

Some years ago, Dr. William Branch of California stated that in most cases a baby is born a small healthy animal with protective tissues and resistance to infection to enable it to survive. From the moment of birth, life consisted of gradual destruction and finally death through injuries and the entrance of infections beyond the outer defences of the body. This may be an over-simplification, but I think we can agree that the attacks of bacteria and viruses and their by-products are the most important factors in the depreciating health of the individual and in the early or late termination of his life.

If these statements are accepted, we

must consider what evidence there is to show that the products of chronic infections of dental tissues do reach through the outer defences. Dental infections are extremely prevalent in the mouths of many of our patients, particularly as they become older and the level of resistance is lowered. Are they foci of infection defined by Dr. Joseph Pollia as "circumscribed masses of tissue that harbor infection from which the general system continually receives contributions"?

There are three principal and prevalent conditions which should be considered.

1. Periodontitis or those large and varied chronic infections of the gums and alveolar bone.
2. Apical areas of non-vital teeth.
3. Pathology of the bone in edentulous areas.

1. Periodontal or pyorrhoeal conditions are common in the mouths of the large majority of patients over forty years of age.

In 1937, Okell and Elliott definitely established the fact that chewing on teeth with advanced pyorrhoea caused a bacterial shower in the blood stream. Within minutes samples of blood taken from the arm exhibited bacterial content which, of course, cleared quickly as phagacitic action occurred. This work has been repeated by others with the same result.

When we realize that in badly infected mouths there may be as much as two or three square inches of denuded pus producing surfaces below the margin of the gum, subject to masticating stress fifteen hundred or two thousand times a day, I think it must be concluded that, as Pollia defines, "the general system continually receives contributions" of bacteria and their products.

2. In considering the granulomatous area found at the root ends of many non-vital teeth, there is not such complete evidence. It is a fact though that there is free circulation of blood into and from these tissues, with no fistula for discharge into the mouth. The products

of these areas must be carried through the blood stream.

There is some difference of opinion as to what percentage of these cases harbor bacteria. Some years ago, with the aid of a local bacteriologist, I removed about forty such teeth, selecting those with only small tissue changes, under as nearly aseptic conditions as possible. When mixed cultures resulted from the excised root tip, contamination was probably evident. A large percentage gave pure cultures of strep. viridans and a few strep. haemolyticus.

3. X-rays of edentulous areas and edentulous mouths frequently disclose remaining roots and impacted teeth with adjacent granulation or cystic tissue, and in many cases more or less marked changes in the bone.

When we come to an attempt to assess what injury to the patient results from repeated bacterial showers tossing about in the blood stream, there is very little and very uncertain evidence in the literature. There is in addition the fact that in severe pyorrhoeal cases as much as several teaspoons of pus are taken into the stomach each twenty-four hours.

When the enthusiasm of Rosenow and his co-workers was at its highest, I had the opportunity of seeing some of the work done at Rochester. Cultures were made from the root-ends of extracted teeth and massive doses were injected under the skin of rabbits. Naturally the rabbits became very ill and crippled and many died overnight, with a variety of lesions showing at autopsy.

It is obvious that these experiments were very unlike the conditions of moderate continuous entrance of infection, and this fact together with the over-enthusiasm, probably did a great deal to cause a reversal of opinion. I have not been able to find any reports of any value of studies under conditions similar to those we meet with in practice. The effect of continuous small doses, on the health of experimental animals

and with controls, has not been carefully studied so far as I have been able to find.

The three factors are, of course, the size of the infected lesion, the type of infection, and the resistance of the particular individual. The first of these is easy to determine by careful clinical and x-ray examination. There is as yet, so far as I am aware, no method of determining the virulence of the mixed organisms involved or the amount of resistance of the particular patient to these organisms. There is the complication also that the type of bacteria in many of these areas changes readily through introduction of new strains into the mouth.

To sum up, it does appear proven to me that there is a continual entrance past the outer defences of the body, of material from chronic dental infections. It must be admitted that many people with these conditions in the mouth, remain in excellent health, just as many others come in contact with highly contagious diseases and do not contract them. I suggest though that this does not prove that those with a low general health level and often of advancing years are not affected by such pathologic areas. I believe infected areas with bone lesions in other parts of the body would be looked at with some concern as a contributing factor to general ill health. Chronic and semi-acute infections of a neighboring part, the tonsils, are a somewhat similar situation and harm from absorption from these tissues is recognized. In one of his Epistles, St. Paul remarks, "For as the body is one, and hath many members, and all the members of that one body, being many, are one body." For those who are ill, the clearing up of dental infections would seem to be a contribution of some importance. I think it might also be said that the emphasis should be placed on the retention of good health rather than the cure of disease. The removal of definite pathology from the mouth has its part in maintaining that condition.

Selective spot grinding

by WILLIAM R. SCOTT, D.D.S., Vancouver, B.C.

The purpose of selective spot grinding is to remove tooth structure or filling materials from the occlusal surfaces and cusps of the teeth where these areas are responsible for causing the individual teeth to receive undue stress and strain and where possible to change the direction of the forces to the long axis of the tooth. All the teeth, at least on the working side, should be receiving equal stresses and strains during the chewing excursion. A balanced occlusion would be most ideal (1).

The act of swallowing, bruxism, clenching the jaws together in violent exercises and normal chewing of food all cause considerable pressure on the surrounding structures of the teeth. If any two opposing areas of the dentition are continuously receiving the total load of stress and strain and the forces are directed outside the long axis of the tooth, the supporting tissues in that area will in due course break down, with subsequent loss of the teeth.

In most instances, selective spot grinding alone will not suffice to equalize the stress and strain nor to change the direction of the forces to the long axis of the tooth. Some occlusal reconstruction on most of the teeth will be necessary to obtain a more ideal distribution and direction of forces. However, immeasurable benefit can be obtained in the majority of cases by selective spot grinding.

METHODS OF DIAGNOSIS AND RECORDING MOBILITY

1. Check the mobility of the teeth in all the masticatory movements by placing the thumb and first finger on opposite sides of the maxillary teeth. Have the patient grind the teeth in lateral and protrusive excursions. Have the patient clench the jaws together in quick short strokes in the centric relationship. Move the thumb and first finger forward slowly

while the jaw excursions continue until they come to rest on the upper central teeth.

2. Take a base plate wax imprint of the normal centric relationship (for that patient) both lateral excursions and also in protrusion. Label these wax recordings with the patient's name and the date and save for future reference.

3. Sometimes it is found that rather than closing in true centric, the patient closes to a certain contact and then slides protrusively or laterally, thus into a false centric. Make a wax bite recording of true centric by having the patient retract the mandible forcibly and stopping on first contact. Two or three wax records may be necessary as the habit of closing in false centric is difficult to overcome.

4. By placing articulating paper between the upper and lower teeth and having the patient grind the teeth together, the mobility of the upper teeth is usually more apparent than by trying to watch the mobility of the upper and lower teeth together while the jaw is in motion. After the patient has ground the teeth together with articulating paper, remove the paper and again have them grind without the paper. This will rub through the broader marks made by the paper and show up the high spots more accurately. This procedure is particularly helpful when grinding in gold inlays to proper occlusion as the shiny contact is more easily seen on the inlay when surrounded by the blue marks. Red articulating paper can often be used to advantage to determine centric contacts when the blue paper is used for lateral excursions and the operator can more easily grind the lateral interferences without eliminating the centric contacts.

RULES FOR SELECTIVE SPOT GRINDING:

1. *To correct false centric:* grind the mesial of the upper cusps and the distal of the lower cusps. **MESIAL OF THE UPPER AND DISTAL OF THE LOWER**

spells MUDL. (See illustration No. 1.)

1b. To correct for protrusive: grind the distal of the upper cusps and the mesial of the lower cusps.

2. To correct the anterior teeth in centric relationship: grind the incisal of the lower anterior teeth up to and including mesial incisal of the lower cuspids until mobility is eliminated but not contact. Check the progress by holding the fingers against the upper anterior teeth while the

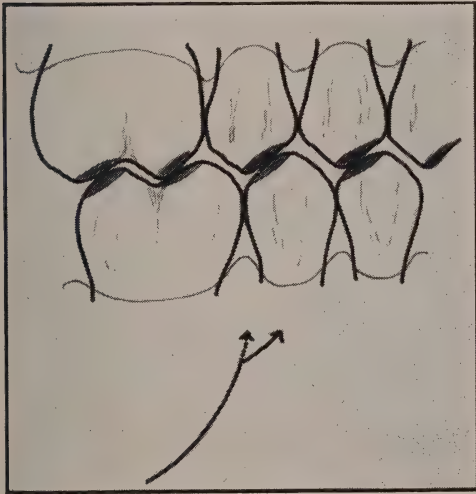


ILLUSTRATION #1:

To correct false centric: grind the mesial of the upper cusps and the distal of the lower cusps.

To correct for protrusive: grind the distal of the upper cusps and the mesial of the lower cusps.

patient champs the teeth together in centric relationship only. Unless the teeth are held firmly by the fingers while checking the bite registrations with articulating paper often little or no markings will be produced because of the lack of pressure between the teeth due to mobility.

(See illustration No. 3.)

Some relief from pressure on the anterior teeth in centric will be secured after the correction for false centric is made.

3. To correct the anterior teeth in lateral or protrusive excursions: grind the lingual surfaces of the upper anterior

teeth being certain not to disturb the established centric contacts. See illustration No. 2b. Note — Where spot grinding is necessary in both lateral and centric re-



ILLUSTRATION #2:

To correct the anterior teeth in centric relationship: grind the incisal of the lower anterior teeth. To correct in lateral or protrusive excursions, grind the lingual of the upper anterior teeth.

ILLUSTRATION #2b

Less grinding will be required in the second molar teeth than in the anterior teeth to obtain equal results. The anterior teeth are further from the point of rotation of the mandible.

relationships it is quite in order to grind the lingual of the upper anteriors as well as the incisal of the lower anteriors. However for obvious reasons loss of tooth structure on the lingual of the upper anteriors, particularly the central and lateral incisors, is less desirable than loss of the incisal area of the lower anteriors.

4. To correct the occlusion of the cus-

pids. In most instances, because of their position in the arch, the cuspids determine the direction and slope of the bite plane of the lateral excursion on the working side. Because of the shape and thickness of the upper cuspids as compared to that of the central and lateral incisors, the lingual and incisal of the upper cuspids can be spot ground to correct for both centric and lateral excursions as well as the incisal and labial aspects of the lower cuspids.

To correct the cuspids for centric relationship and change the direction of the bite plane: grind the lingual toward the incisal of the upper cuspid and the labial toward the incisal of the lower cuspid including the centric contact in each case.



ILLUSTRATION #3:

Shows how to correct the cuspids for centric relationship and change the direction of the bite plane.

Note total amount of vertical closure with small amount of lateral grinding.

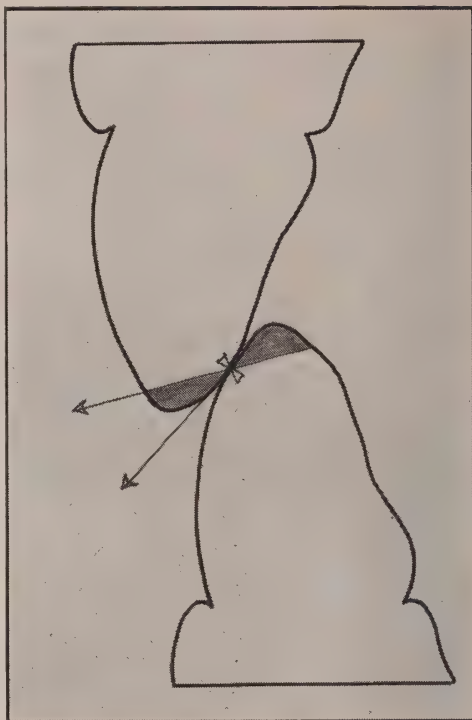


ILLUSTRATION #4:

Shows change of direction of the bite plane without changing centric contact on cuspids.

(See illustration No. 3.)

To correct the direction of the bite plane of the cuspids without lowering the centric: grind the upper cuspid on the lingual from the centric contact toward the incisal. Do not grind the centric contact. (See illustration No. 4.)

5. To lower the bite in centric on the posterior teeth: grind the buccal cusps of the lower teeth and the lingual cusps of the upper teeth or the occlusal surfaces of the lower teeth or the upper teeth or both. Before doing this, check the lateral excursions first. If the lower buccal cusp does not make contact with the upper buccal cusp in the lateral working excursion, then do not remove any of the lower buccal cusp to lower in centric but do the grinding on the occlusal of the upper tooth. Conversely, if the lower

buccal cusp is high in both lateral and centric relationships, grind the lower buccal cusp. If the lower lingual cusp does not make contact with the upper lingual cusp in the lateral working excursion, grind the occlusal of the lower tooth but not the lower lingual cusp. Conversely, if the lower lingual cusp is high in both the lateral working excursion and in centric, grind the lower lingual cusp to correct in centric.

This procedure will decrease the pressure in centric and increase the slope of the bite planes of the cusps. (See illustration No. 5.)

Less grinding will be required in the second molar region than in the anterior

region to obtain equal pressure in centric or lateral excursions. Then too, a little loss of tooth structure in the posterior region, lowering the bite, will necessitate a proportionately increasing loss of tooth structure from the posterior teeth to the anterior teeth. (See illustration No. 2b.)

When closing the bite in centric, though seldom necessary except in correcting newly placed inlays or bridges, keep a close check on the relationship of the anterior teeth and the lateral excursion on the balancing side.

6. *To correct the bite in lateral excursions (working side):* grind the lingual aspects of the upper buccal cusps and the buccal aspects of the lower lingual cusps. **BUCCAL OF THE UPPER AND LINGUAL OF THE LOWER SPELLS BULL.** (See illustrations Nos. 6 and 7.)

7. *To correct the bite in lateral excursions (balancing side):* grind lingual aspects of the lower buccal cusps and the buccal aspects of the upper lingual cusps. Make certain not to relieve all the contacts necessary for centric contact. (See illustration No. 6.)

8. *Cross bites:* Treat these teeth so involved as if the lower teeth were upper teeth and vice versa.

SUMMARY OF PROCEDURE:

1. Correct false centric.
2. Correct anteriors for centric.
3. Correct for lateral excursions of posterior and anterior teeth along with centric and protrusive.

Proceed with caution: do a little spot grinding at a time and keep a continuous check on the various excursions throughout the procedure. Since the surfaces of the teeth are being ground away at an angle to the vertical and the resultant closure of the bite is in direct vertical, it sometimes requires as little as $\frac{1}{2}$ mm. loss of tooth structure to obtain a full 1 mm. closure of the bite. This, of course, depends on the slope or angulation of the cusps. (See illustration No. 3.)

In most instances it will not be possible

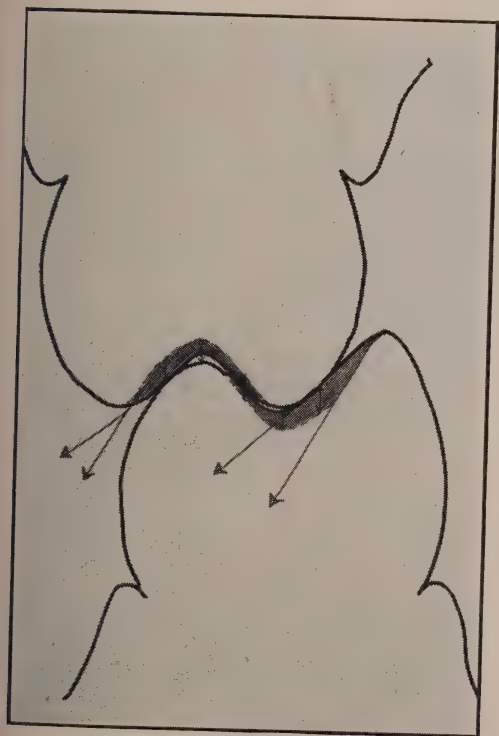


ILLUSTRATION #5:

(a) Shows areas of occlusal surface to grind to lower the bite in centric and to increase the slope of the bite plane of the cusps.

(b) Different amounts of grinding are necessary in different areas depending on the position and slope of the cusps.

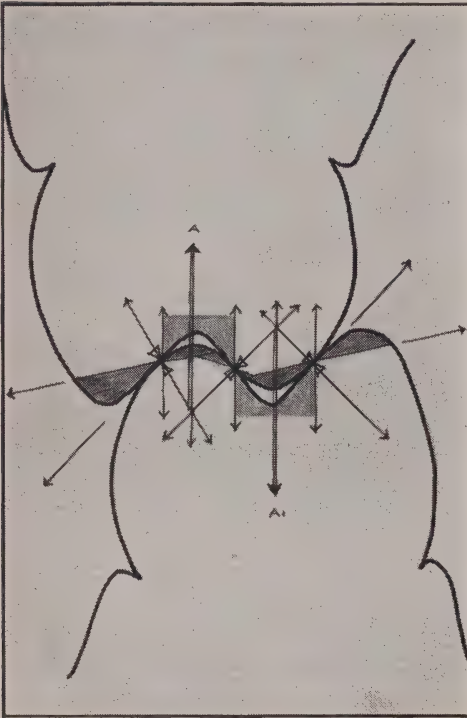


ILLUSTRATION #6:

(a) Shows resultant direction of forces through the long axis of the teeth A-A 1 when equal contact is made on all surfaces of the teeth. Unequal contact would result in levering of the teeth.

(b) Shows change of the direction of the bite plane of the cusps by grinding the buccal cusp of the upper and the lingual cusp of the lower, without lowering in centric.

(c) To correct the bite in lateral excursions (balancing side) Grind the lingual aspect of the lower buccal cusp and the buccal aspect of the upper lingual cusp—do not disturb centric contact.

to do sufficient spot grinding to bring all the teeth into the desired unified function. It is not altogether necessary to obtain a complete balanced occlusion, as outlined by D. W. McLean (2) as it would be for an artificial denture. What can be accomplished is to relieve excessive pressures and levering of the teeth and to establish an arbitrary bite plane for the working side.

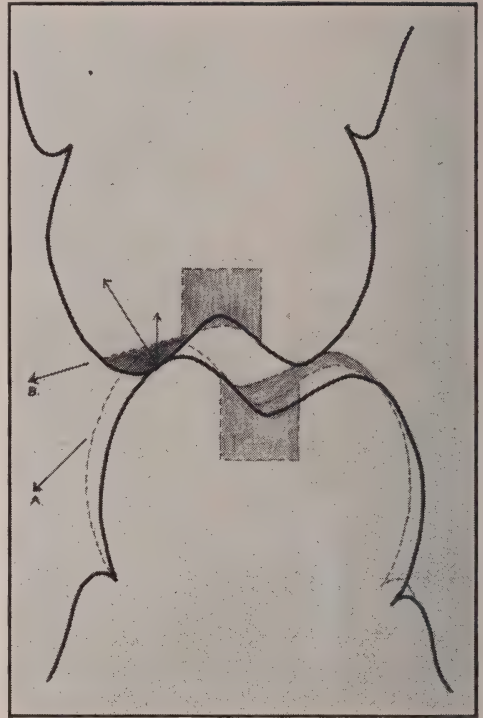


ILLUSTRATION #7:

Grind the buccal cusp of the upper tooth or the lingual cusp of the lower tooth to correct in lateral excursion (working side).

(b) Conversely, the upper buccal cusps or the lower lingual cusps can be built up with gold inlays to create equal pressure on the cusps in the working or centric positions.

The occlusal surfaces of all other teeth on the working side can then be reconstructed to conform to this established bite plane. (See illustration No. 7.) Then the forces of mastication are distributed equally through the teeth on that side to the supporting tissues.

REFERENCES

- (1) Balancing the Occlusion, Dr. William R. Scott – Canadian Dental Journal, October 1940.
- (2) Occlusal Orthopedes, Dr. D. W. McLean – Dental Cosmos, April 1932

A professional worker and his responsibilities

by JOSEPH McCULLEY, M.A.

Warden, Hart House, University of Toronto.

This is the end of the dinner circuit! The date was thoughtfully arranged many months ago. It was very easy to make a commitment that far in advance. Ultimately however, comes the question, "what to say".

There are times when one questions the value of words and is apt to moan, "words, words, words!". One does not, however, forget the fantastic and frightening words of Hitler from the Sports Palast in Berlin; they were influential. Nor does one forget the inspirational words of President Roosevelt in his first fireside chat to the American people. Every bank in the country was closed. His words at that time helped to restore the faith of the American people in themselves. His words during the war years were equally effective. Nor will posterity ever forget the immortal words of Winston Churchill who, alone and unaided, summoned the western world to its own defence. Without any mock humility I could doubt whether I have the eloquence of any of the great orators of history! I am also rather frightened as I recall Mark Twain's slightly cynical statement: "To be good is noble, to teach others how to be good is nobler—and less trouble". Nevertheless, this is your Graduation Banquet; you are leaving the cloistered halls of the University and being thrust into the cold, cruel world. It is my responsibility, as your Dean has asked me, to endeavour to say something of hope, encouragement and faith.

Some weeks ago, in addressing our annual Hart House Committees' Dinner, I

quoted Sinclair Lewis who put these words into the mouth of one of his characters: "You'll be expected to make speeches full of such words as charity, ideals, democracy, freedom, faith, loyalty, patriotism, industry, responsibility, which are like the caresses of prostitutes, warm but vomitable." To my mind this is a philosophy of despair and disillusionment. If the day ever comes when we are afraid to speak of these things,—justice, democracy, brotherhood, patriotism, faith—we are indeed lost souls, —crawling ants on a cosmic speck of a planet. Just because good and great words are prostituted to unworthy purposes let us not give them over to the charlatans. Let us rather be proud to reassert their meaning in our lives. Let us not apologize to a materialistic and secularistic world for being naive enough to have some ideals.

During the past few months in Canada there has been much talk about the failures of education. If it has failed (and this I am not prepared to admit) it is because we have not produced enough persons with great faith and great convictions. Only by great faith can great dreams come true. If I have any complaint it is not that there is so little for the mind but rather that there is not enough to feed the heart, the soul, the eternal spirit of man.

In my judgment there is too easy a tendency—a tendency perhaps more noticeable in our universities than elsewhere—to think of education as a purely intellectual process, or at least primarily an intellectual process. As one who for twenty years saw elementary and secondary education at close range, I can assure you that a child in a classroom is not a disembodied mind; I am equally sure that a university student also possesses other faculties than those of pure intel-

Address to The Faculty of Dentistry graduation dinner, University of Toronto, 6th May, 1954.

lect! In my judgment all knowledge is barren, sterile, futile, until and unless, at some point, it becomes relevant to human need. I once heard of a graduate student who spent many years on a thesis on "The origin, history and uses of the preposition 'to'". Such an exercise may have some value in a purely intellectual sense but I seriously question its meaning as true education.

Is it not our responsibility as members of a university community to assert to an over-materialistic world, with its meretricious and superficial values, that there is still a place for an élite — an aristocracy—a sense of "noblesse oblige". When history comes to be written, our civilization will not be judged by the number of bathtubs, telephones, or automobiles per capita, but rather by its recognition of, or its failure to recognize, the importance of honour, dignity and things of the spirit. A Greek poet has expressed it thus:

*"Not by her houses neat,
Nor by her well-built walls
Nor yet again
Neither by dock nor street,
A city stands or falls.
But by her men.*

*"Not by the joiner's skill,
Nor work in wood or stone,
Comes good to her or ill,
But by her men alone."*

This address is a response to the toast to the University; I am treating it very broadly because I have a high standard of what a university education should mean. An outstanding American educator (D. E. Trueblood), speaking recently at McMaster University, talked about "disquieting symptoms among our young people—wildness, self-centredness, self-expressionism and the rebellion against authority." I know that one can find some justification for such an indictment in our day and generation but this is nothing new. I quote:

"The world is passing through troubled times. The young people of today think of nothing but themselves. They have no reverence for parents or old

people. They are all impatient of all restraint. They talk as if they alone knew anything, and what passes for wisdom with us is foolishness with them. As for girls, they are forward, immodest, and unwomanly in speech, behaviour and dress."

This is from a sermon by Peter the Hermit in 1274, A.D.!

I do not join with the Jeremiahs who would condemn all our young people with such a sweeping condemnation. I have come back to this campus after an absence of thirty years; I have been impressed by the quality of hundreds of the young people whom I have met. Utopian and idealistic Yes,—but without letting the stardust blind their vision! Realistic? Yes,—but not cynical! I have great hope that the new generation will see with clearer eyes than some of their predecessors and that they may succeed in places where we have failed.

In the University there is constant questioning regarding respective merits of liberal and so-called technical education. This is a discussion which has gone on for a long time and will go on. It is true that those subjects generally described as the humanities have always tried to instil in the student a concern for fundamental problems, the nature of man and his society—to teach him how to relate himself to a larger framework of meaning and to explore the problems of ultimate values. But there is no one discipline or combination of disciplines which is a certain method of accomplishing this end. We live in a world which has been re-made in the last 100 years by the advances in physical and biological sciences. No truly educated man can ignore this fact.

You have had an education which is largely centred on scientific foundations but you have also lived in a university which stands for the whole wide, complex field of knowledge. Even though unconsciously, your course and your life in this University must have had some influence!

You are entering on a recognized profession. May I briefly raise the question of what constitutes a profession and a professional attitude. With apologies to Gerald B. Leighbody of the University of the State of New York, I suggest a few criteria:

- (a) The professional worker does not require close supervision or direction.
- (b) He does not work by the hour nor expect to be paid by the hour.
- (c) He takes full responsibility for the results of his own efforts and actions.
- (d) He continually seeks self-improvement and contributes to the skill and knowledge of his own profession.
- (e) He respects the confidences which are given to him "in confidence"—he is loyal to his fellow-workers—he avoids rumour and hearsay about his clients or his fellow-workers.
- (f) A professional worker does not advance himself at the expense of others and expects promotion and advancement in his profession only on the basis of superior preparation and worthy professional performance.
- (g) (And I think this is probably of greatest importance)—a professional worker's chief desire is to render a service. He must work to improve man's welfare in his own professional capacity. And as a citizen in a respected position in society he must be prepared to give leadership beyond his professional ranks and in the larger community of which he is at all times a member.

We are indeed living in troubled times. This is no cause for moaning and groaning. Never has life been so interesting nor have opportunities for vital human

service been greater. A democratic society can only live on the basis of the intelligence of each and every member of it. But a democracy without leadership is only a mob, subject to all the influences of mob hysteria. It is your privilege and mine as members of a university community to provide that leadership. Not only is it our privilege, it is our duty. I reiterate, there is still a place for an élite, an aristocracy, a group in our society with a sense of "noblesse oblige," a dedication to that age-old concept that salvation comes only as men are willing to lose themselves in something greater than themselves. You have already been told what you must do as members of the Dental Profession. It is my privilege tonight to suggest that you have a larger role—as graduates of a university—as citizens—by your words and by your example to help to create in this northern half of this continent a society with standards loftier than the merely physical and more eternal than the gaudiness and cheapness in which we are too easily submerged. Unless your university has given you some concept of this nature, it has failed of its basic purpose. If it has given you even a suggestion along these lines, it has justified its role as your Alma Mater.

*To steel our souls against the lust of
ease;
To find our welfare in the general
good;
To hold together, merging all degrees
In one wide brotherhood.
To teach that he who saves himself
is lost;
To bear in silence though our hearts
may bleed;
To spend ourselves, and never count
the cost,
For others' great need.*

Richard T. Odell, M.D., and J. Albert Key, M.D., of the Department of Surgery, Washington University, School of Medicine, St. Louis, report that "226 parts per million of sodium fluoride in the drinking water of rats does not inhibit the repair of fractures, and they suggest that this may exert a slightly favorable influence on the process." The full report of their study, entitled, "The Effect of Chronic Fluorine Intoxication Upon the Healing of Experimental Fractures in Rats", was published in the September 1953 issue of "Annals of Surgery".

Bleaching of discoloured pulpless teeth*

by J. H. MERRELL, D.D.S., Vancouver, B.C.

PREPARATION OF PATIENT

1. All fillings must be removed from the tooth.
2. Remove entire roof of pulp chamber. Freshen all surfaces and remove with a bur all visible surface stains.
3. Take root filling down to a point below the line of the labial gingiva.
4. Rubber dam is applied over the involved tooth only and held securely in place with a double turn of dental floss tied tightly to prevent leakage.
5. Dark glasses may be worn by patient and dentist. A dampened towel is placed over the patient's face and chin with a small hole cut in centre to expose the tooth.

TECHNIQUE (*drug of choice, Superoxol*)

1. Swab pulp chamber with alcohol and dehydrate with warm air.
2. Fill pulp chamber of the tooth with cotton moistened with superoxol. Cover the labial surface of the tooth in the same manner.
3. Expose the tooth to heat from an infra-red lamp or a No. 1 photo-flood light and adjust the distance from ten inches to two feet, so that the patient does not complain of intense heat.

*Presented as a chair clinic presentation to Vancouver and District Dental Society, January, 1954.

4. From time to time a drop or two of bleaching solution should be added to the surface of the tooth and pulp chamber by means of a small glass syringe.
5. After the first five minutes turn off the light, remove the cotton and dry the pulp chamber. Fresh cotton is placed in and around the tooth and a fresh supply of bleaching solution applied for another five minutes period. This process is repeated for from four to six periods of five minutes each.
6. Seal a superoxol moistened pellet in the pulp chamber with a double seal of temporary stopping and cement. Hold the cement under pressure with a small piece of rubber dam until set. Carefully examine the cement for leakage, as a pinhole is sometimes present owing to escape of released oxygen.
7. Repeat in four or six days if necessary for colour.
8. Translucency may be improved with 80% chloral hydrate. Dry pulp chamber, flood with chloral hydrate and apply pressure over the cavity opening with a piece of unvulcanized rubber on your finger.
9. Impregnate the outside of tooth with Gottlieb's impregnol solution.
10. Defer final filling until another sitting to be sure of result.

An accurate, detailed clinical and radiographic survey of all fractured anterior teeth is a necessary prerequisite to a clear diagnosis.

The treatment, based on this diagnosis, must be palliative and protective and instituted at the earliest possible time. The esthetic restoration of the lost tooth tissue is as vital as the preservation of the tooth itself. All procedures are undertaken with a view to retaining this tooth as a normal, functioning member of the dental mechanism.

Irving W. Eichenbaum and Naomi A. Dunn,

Annals of Dentistry, March 1954.

ABSTRACTS



The Diet and Mastication; Their Effects on Diffusion and on the Inception of Dental Caries

by RONALD B. NEVIN, B.D.S., B.Sc., A.N.Z.I.C.,
University of Otago Dental School, Dunedin,
New Zealand.

Published researches on the rate of sugar clearance from the mouth, and on the relation of foods to dental caries, have so far not attempted any correlation with the processes occurring in the protected areas of high caries susceptibility. This paper is an attempt to provide a suitable link between the knowledge and the facts and hypotheses regarding the process of dental caries. It also presents some original concepts developed for the guidance and correlation of further research on these matters. The following is a summary of the observations and discussions.

1. Measurements were made of the rates of interchange of acids between their aqueous solution and another liquid, when one of them was contained in narrow spaces (representing occlusal fissures and interproximal areas) formed between parallel glass rods, and the apparatus immersed in the companion fluid.
2. When distilled water was the companion fluid the conditions represented both the inward and outward diffusion of soluble foods, such as sugar. When it was a buffer solution, there was represented the diffusion outward of the acids resulting from fermentation of carbohydrate food-stuffs.
3. Agitation effects simulating both muscular activity and the movements of the

food during mastication, greatly increased the rates of diffusion of both acid and of "sugar" (inward and outward). Short periods of vigorous "mastication" were much more effective than prolonged periods of vigorous "mastication" were acid diffused out much faster than "sugar."

4. The concentration reached in the space when "sugar" diffused inward, depended on the external concentration and the period of exposure. With concentrated solutions a relatively high concentration was reached in a short time. "Function" greatly decreased both the time and the external concentration required. An appreciable time was required to reduce this concentration to a low level when diffusion outward was unimpeded and functional effects were not operative. This did not apply so much to acid under the same conditions.

5. When the space was blocked by a small roll of filter paper (representing food debris), the rate of diffusion outward for both acid and "sugar" was greatly prolonged. When the "Food" had some buffer capacity, the acid diffusion was very rapid.

6. For the blocked condition, variation in the buffer capacity of the surrounding liquid affected the rate of diffusion of acid, but it was still prolonged for the highest value used. Saliva was as effective as a phosphate buffer of the same titer.

7. For the constant permeability of "food" containing "sugar," the concentration reached in the space was proportional to the concentration in the "food."

8. Food containing acid considerably decreased the outward rate of diffusion of acid from the space.

9. Measurement of the rate of diffusion out of a narrow space fitted with multiple electrodes, showed that steep concentration gradients can exist for lengthy periods of unimpeded diffusion. Functional factors would shorten the time and steepen the gradient.

10. Certain specific conclusions are drawn from a discussion of the experimental data.

11. The experimental conclusions are used as models to illustrate the principles of a hypothesis concerning the relation of

the diet, mastication, and some properties of the saliva in relation to the inception of dental caries, the morphology of the carious lesion, and local variations in caries incidence. It is shown that a clearer mental concept of these processes can be gained by viewing the effects of foods in terms of certain individual chemical and physical properties. Determination of these properties for cariogenic foodstuffs will supply fundamental knowledge that should greatly assist in the controlled altering or "tailoring" of these properties. This process should have considerable possibilities as a general caries control measure.

Carious-like Lesions of Enamel Produced in the Artificial Mouth.

by WARD PIGMAN, Ph.D., WILLIAM HAWKINS, M.S., HAROLD WEST, D.D.S., and CAROLYN GASTON, M.S., Birmingham, Ala.

Oral Surgery Oral Medicine and Oral Pathology, April 1954.

Freshly extracted teeth were mounted in plastic boxes and the surfaces were photographed at a magnification of about 8x. The mounted teeth were placed in cylindrical glass funnels and a bacteriologic medium was allowed to flow dropwise over the individual teeth. The teeth were inoculated at weekly intervals by soaking for thirty minutes in a sample of pooled saliva. Usually at regular intervals, the teeth were examined at a magnification of 30x and photographed when necessary.

Under these conditions, lesions of the enamel have been produced which are very similar in appearance and position to natural carious lesions. By the use of bilaterally identical teeth, it has been shown that tooth surfaces brushed twice daily remain fairly sound for long

periods, whereas unbrushed or roughened areas soften rapidly. Typical regions of attack of brushed teeth are developmental pits and grooves particularly on the occlusal surfaces, proximal surfaces, and cervical areas near the cemento-enamel junction. The mode of attack is quite different when a strictly decalcifying medium is used without bacterial development.

Individual teeth exhibit considerable difference in resistance to enamel attack. Apparently deciduous and unerupted teeth are much less resistant than old erupted teeth.

Enamel attack has been observed only when glucose is present in the media, and when streptococci, lactobacilli, or both have developed. In the absence of glucose, the tooth surfaces remain intact for long periods.

Dentine is decalcified under these conditions, but usually the structure is retained. Some instances of dentine destruction have been noted; in current investigations the conditions necessary for dentine destruction are under active investigation.

Fluoridation of Domestic Water Supplies in the Control of Dental Caries

by H. H. STONES, M.D., M.D.S., F.D.S.R.C.S., Professor of Dental Surgery, University of Liverpool.

British Dental Journal. April 20, 1954.

In endemic fluorosis regions there is a marked reduction in the incidence of dental caries in children. Recent studies have shown that this beneficial effect continues to middle age.

In 1945 the fluoridation of domestic water supplies for reducing the incidence of dental caries was started in certain selected communities in the United States and in one in Canada.

Eight of these communities in which fluoridation was started between 1945 and 1948 have been used as study centres.

In the various studies the incidence of dental caries in children aged 5 to 12-15 years was recorded prior to fluoridation. The results obtained have formed a baseline for subsequent comparison. In some centres as an additional control, dental examinations have been undertaken in an adjoining community with a low fluoride water supply. In the early studies results are now available on the youngest age groups showing the effect on teeth

that have been subjected to fluoridation during the whole period of their formation, mineralization and eruption. These teeth show a reduction in dental caries incidence of 40 to 50 per cent compared with the prefluoridation data and controls. In older age groups the dental caries reduction is not as yet so marked.

The dosage is considered. The usual level of fluoridation in the centres is 1 to 1.2 p.p.m. as fluorine. Temperature probably has an effect on the amount of water consumed and the data suggests that in North America for 50°F. as a mean annual temperature the concentration of fluoride should be 1.2 p.p.m. and for 70°F. it should be 0.6 p.p.m.

The administration of fluoride in other media is considered but there are no results available to show that this would be satisfactory. In any case it is doubtful if it could be recommended as a public health measure.

The mechanism whereby dental caries reduction is effected is discussed but this has not yet been elucidated.

The question of storage of fluorine in the bones is considered. The evidence indicates that this hazard following ingestion of fluoride at the level used in the fluoridation of water is negligible in view of the normally efficient urinary excretion of fluoride.

A Type of Pain Associated with the Restoration of Teeth with Amalgam

by JACOB JOHN NACHLIN, D.D.S., Jamaica, N.Y.

Journal of the American Dental Association, March 1954.

A type of dental pain first described by Romnes and Skinner and associated with an amalgam restoration which is contaminated with moisture is caused by an electrical phenomenon within the amalgam filling, wherein the filling acts as both battery and condenser. The single tooth acts as both anode and cathode of this galvanic cell, and the saliva

with or without the "bone fluid" acts as the electrolyte. There are several ways in which the tooth can act as the cell. The tooth must be capable of acting as a condenser if the nature of this type of dental pain is to be explained.

This reaction when it occurs can be stopped in several ways: (1) Palliatively by drying the tooth and coating it with cavity varnish or collodion; (2) palliatively by removing a superficial layer of the filling and replacing it with cement; (3) definitely by removing and replacing the amalgam filling with one which is not contaminated with moisture.

Terramycin in Oral Infections

by FRANKLIN B. JAFFE, B.S., D.D.S., and CHARLES H. REDISH, D.D.S., New York, N.Y.

Oral Surgery Oral Medicine and Oral Pathology, April 1954.

This clinical study with Terramycin was instituted as an attempt to evaluate the effectiveness of this antibiotic in the treatment of oral infections commonly encountered in which penicillin was the antibiotic of choice.

The results were consistently good and are similar to those reported by other authors. The combined studies indicate that Terramycin is a useful alternate for penicillin in the treatment of oral infections. Where patients are allergic or sensitive to penicillin, or where the dental surgeon is confronted with an acute infection that does not respond to penicillin, he can safely use Terramycin with an 80 to 90 per cent assurance that the antibiotic will be effective. This therapy has not eliminated the need for surgical treatment, but is a specific ancillary

treatment, which in many cases effects resolution without surgery.

In this study of thirty-one cases, Terramycin was used successfully as an alternate antibiotic. The results were uniformly good, with some patients showing a dramatic response to treatment. In many cases clinical improvement was observed in twenty-four to seventy-two hours, indicated by a return to normal temperature, reduction of inflammation, and so forth.

Treatment time averaged four to seven days, during which time about 7 Gm. of Terramycin was given to each patient. This dosage was appreciably lower than recommended and used in reports of similar cases. The results obtained with these smaller doses were encouraging, and would seem to indicate that ambulatory patients with oral infections do not require more than 1 to 1.5 Gm. daily. Side reactions were minimal. In only one case was treatment discontinued because of a side reaction and in that case the patient had improved sufficiently that no change to other treatment was indicated.

Accuracy and Impression Procedure Using the Alginate Materials

by DANIEL A. LISTIAK, D.D.S., M.S.D., F.A.C.D., Minneapolis, Minnesota.

North-West Dentistry, March, 1954.

The data from experiments definitely show that the alginate materials are accurate to a degree that is sufficient for their use in dentistry. The accuracy does vary slightly with the different brands of materials.

Fairly constant results in accuracy of reproduction are produced only when the procedure is carried out accurately in every detail.

The spatulation time, volume and

water temperature must be measured accurately and according to the manufacturer's specifications.

Seat the impressions gently without pressure and hold in position without movement until at least one minute after the complete gelation of excess material in the mixing bowl.

Break the "seal" and remove the impression with a quick snap.

Remove the mucin under cold running water and pour-up the impression immediately. Box the impression so that it can be poured-up in an upright manner.

Wait at least one hour before separating the stone cast from the impression.

The better technique for taking impressions for partial dentures is by the compound-alginate method.

EDITORIAL

Dentistry for Children

"Little can be done for grown-up people; intelligent man begins with the Child". Recently some 250 Canadian dentists took these words of Goethe's to heart and for the fourth time spent an entire day at the annual meeting of the Canadian Society of Dentistry for Children in gaining knowledge to equip themselves to render a higher degree of dental service to the children in their care. The increasing interest in the field of dentistry for children over the past few years has been almost astounding. It was not so long ago that a clinician in this branch of dentistry could hardly muster a sufficient number of auditors to make his presentation worthwhile. Now, groups such as this Society and Paedodontic Study Clubs are being organized to provide instruction over and above that being given at our provincial and national dental conventions. This clearly demonstrates that the dental profession once more is taking action to provide a type of dental service which characterizes a true profession—a kind of activity which tends to reduce the need for its own services.

Even the most unindoctrinated member of the laity can see the sound commonsense of an approach which is preventive in its outlook as opposed to a method which renders treatment after the damage has been effected.

Someone has told a story that substantiates this point of view: Near the close of a long hard day a labourer was completing the final levelling of a newly-laid concrete sidewalk. After he put aside his trowel and was preparing to cover the new surface with a tarpaulin, a leaf dropped from an overhanging branch and fell upon this cement. Being in haste he did not remove that leaf but continued with the covering operation. A day or two later when he returned, he removed the tarpaulin and noticed the leaf lying on the surface of the walk. He peeled it off and there outlined to his gaze was an astonishingly perfect reproduction of that leaf. Undoubtedly it would have taken many many hours for a highly skilled artisan to achieve the same result with hammer and chisel.

The moral, of course, is apparent. When one deals with something in its moldable or pliable state, such as a young child, how relatively easy it is to obtain desirable results. But when the object of our endeavours develops to maturity, then a much higher degree of activity is necessary to achieve an outcome which at best is still inferior to that which nature provided.

For one reason or another many men in the general practice of dentistry refuse to provide dental treatment for children. That, of course, is their privilege, but it is highly argumentative whether or not it is their right. It would seem that the responsibility one assumes when he undertakes the practice of dentistry does not provide for the exclusion of certain human beings because they happen to be children. Make no mistake about it, any possible governmentally-enforced change in the patient-dentist relationship, as we know it at the present time, will not come about by the dental health problems of the adult population, but rather will accrue from a dissatisfaction with a service which pays insufficient attention to the nation's chief resource—its children.

No one is suggesting that there should be a cessation of the practice of prosthetic dentistry or the elimination of periodontal therapy or operative dentistry for adults, but a new perspective is needed whereby the thesis of true preventive dentistry does not become the antithesis of mechanical repair.

The Dental Bulletin

The Journal extends a welcome to the newest member of Canadian dental publications, *The Dental Bulletin*, published by the College of Dental Surgeons of the Province of Quebec. The first issue is interesting in content as it reports upon a recent study of dental problems in Quebec undertaken for the College by an outside research group.

The Dental Bulletin is designed to establish and maintain better lines of communication between members of the profession and the College itself.

The format of this four-page bulletin is highly adaptable to the needs of any local society and a perusal of this publication may engender like journalistic activity in other Canadian dental organizations and societies.

Book Review

The Elements of Dental Therapeutics and

Anaesthesia by M. Gerson, L.D.S., R.C.S.,
Eng. Published by Henry Kimpton, 25 Bloomsbury Way, London, W.C.1, England. Pages 91. Price: 10/6.

The author's approach to Dental Therapeutics and Anaesthesia is totally different from any heretofore presented on this topic. The initial framework upon which his theories are based is a smattering of physical science in the first half of the book. It is impossible to determine whether the information in these introductory chapters is from a recognized source, since McDonogh is the only reference cited. This writer is quoted liberally throughout the book, but aside from his being responsible for the following axiom "Correlation must take the place of differentiation if we are to see any real advancement", there is no information on him.

From page one forward the writer assumes a background of knowledge on the part of the reader about the subject of the quantum groups which very few will possess. To expect to gain even a nodding acquaintance with these all embracing segments of the universe in seventeen pages would seem to be over-ambitious. The next eighteen pages which with the illustrations are designed to further instruct the reader served only to increase confusion. No further clarification was possible since reference material was not available.

The author discusses several disease entities in terms of their effect upon the physical composition of blood. The validity of this wholly unorthodox approach rests upon the information offered

in the earlier chapters. If one cannot accept or even understand the basic principles of such a theory, then such statements as the following are without significance.

"The continuous process of expanding the protoplasmic molecules of the blood renders aberrant as McDonogh terms it, their cyclic contraction which results in over contraction of these condensed molecules in the cerebral centers which govern the central and autonomic nervous systems of the body."

Gingivitis is described as a "dental manifestation of disease significant of the rythmical change of dispersion the blood normally undergoes being rendered aberrant. Gingivitis indicates a very mild aberration the more severe resulting in intravenous clotting of the blood.

Diabetes

"According to the formula $6 \div 6 = x$, the blood protoplasmic molecule assumes the property of radiation and tends to over-expand during its cyclic change of pulsation. Owing to the low level of its condensation, however (the girders which bind sugar and certain other constituents to the nucleus having been contracted, shortened or tightened) this over-expansion becomes a permanent factor and the change of disintegration is rendered aberrant, the blood being unable to re-absorb sugar during its cyclic pulsation".

The author's concept of therapeutics is based upon a totally unorthodox approach to the mechanics of pathology. It is therefore impossible to assess how valuable a contribution this book can make toward the treatment of dental disease.

JOHN F. METHVEN.

The Association

1954 Annual Meeting at
St. Andrews-By-the-Sea, N.B.

In order to secure reduced railway fares, certificates will be supplied from this office on request. You will notice that special arrangements have been made for those arriving by air. Be sure to indicate your mode of travel so that proper arrangements will be made for you.

FACTS (on fluoridation)

The information contained in this brochure on the subject of fluoridation has been compiled by the Committee on Dental Public Health. The language is chosen so it may be easily understood by the laity. The purpose of this publication is primarily to answer questions which have been raised upon the subject in short concise form. Single copies will be supplied free and information

on quantity rates may be obtained by writing:

The Canadian Dental Association,
234 St. George Street,
Toronto 5, Canada.

Health Insurance Studies

At the recent meeting of the Health Insurance Studies Committee (April 23-24) study was given to the formulating of revised policy statements respecting pre-payments and post-payment plans for dental care. These statements will be presented for approval at the forth-coming Annual Meeting. The Committee is making every effort to develop accurate health statistics for planning purposes. Several reports from provincial committees were carefully reviewed. The Compilations being issued on the Canadian Sick-ness Survey are under study by the Com-mittee. (See C.D.A. Journal Sept. '53 p. 509)

Revised Table IV—Statistical Data

The original table appeared in the May, 1954 issue of the *Journal* and is hereby re-vised as follows:

TABLE IV
NUMBER EMPLOYED IN HEALTH SERVICES BY PROVINCE
As of January 1954

	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Totals
Dental Schools: (Teaching Staff)											
Full-time.....	0	0	2	0	9	11	0	0	2	0	24
Half-time.....	0	0	0	0	15	6	0	0	18	0	39
Hospital Service											
Full-time.....	0	0	3	2	0	29	0	3	4	6	47
Half-time.....	0	0	0	1	0	4	0	0	0	3	8
School Dental Service:											
Full-time.....	0	0	1	0	14	17	2	1	3	20	58
Half-time.....	0	0	3	3	6	57	2	1	3	2	77
Public Health Service:											
Full-time.....	0	3	3	1	1	14	7	7	0	9	45
Half-time.....	0	0	0	0	6	0	0	0	0	0	6

The Corps

Colonel F. R. Drewry inspected No. 5 Field Dental Company R.C.D.C. (R.F.) with headquarters in Halifax, in connection with the Reserve Force RCDC General Efficiency Competition.
Promotion of Capt. J. A. Lauziere to the rank of Major has been announced.
Major Lauziere was born in Assiniboia,

Sask., served in the R.C.A.F. and the Canadian Army during the Second World War and retired in 1946 with the rank of Lieu-tenant.

In 1950 he graduated from the University of Montreal and was appointed to the Royal Canadian Dental Corps, serving in Europe and latterly in Quebec.

He is married, and has three children.

The Library

The Library of the Association consists of practically all the books related to dentistry which have been published during the last ten years. A considerable number of volumes published earlier are also available.

The Library has been made possible through the generosity of interested members of the Association. All monies received are used for the purchase of books. The Association bears the cost of administration.

For the benefit of members and all others interested, the library is open daily from 9.00 a.m. to 5.00 p.m. except Saturdays and Sundays. All dental periodicals are available.

Books may be borrowed by the membership by writing: Librarian, Canadian Dental Association, 234 St. George St., Toronto.

Additions to the Library

BRASIER, S. Maxillo-facial laboratory technique and facial prostheses. 1954. 232p. illus.

GREEP, R. ed. Histology. 1954. 953p. illus.

LONGSBERG, P. Changes in the size of the lower jaw on account of age and loss of teeth. 1951. 90p. illus.

RHYNE, C. S., and MULLIN, E.F. Fluori-

dation of municipal water supply—a review of the scientific and legal aspects. 1952. 62p.

SCOTT, M. L. School feeding—its contribution to child nutrition. FAO Nutritional Studies No. 10. 1953. 129p. illus.

KLATSKY, M. and FISHER, R. L. The human masticatory apparatus. An introduction to dental anthropology. 1953. 246p. illus.

Committees and Councils

Housing

234 St. George Street has by now become a by-word in dental nomenclature and will not likely be in need of revision by the powers that be for many years to come.

To those of us who have the happy privilege of giving supervision to our headquarters structure, we say the dental profession might well point with justifiable pride to the foresight and guidance of all those, either directly or indirectly, and that includes the members from coast to coast, who had a part in its establishment.

In any progressive objective which has come to fruition, there is always one or more outstanding instances which might be singled out as worthy of special mention. The fact that all ten corporate members (Provincial Boards), setting aside all parochial thinking, all imaginary boundary lines, all population density, all language and creed differences, voted without dissenting voice, either audible

or inferential, that 234 St. George be the Headquarters, was ample proof of their confidence in the future of the Profession in Canada. Is it any wonder that your trustees accept their responsibility with justifiable pride?

We could cite many instances of unselfish devotion by many individuals, but they would be the first to brush aside any personal acclaims and place them in the lap of their profession, through which they have been privileged to serve.

It has been said that "to err is human" and to those who never lost faith in the profession's ability to carry out the financial obligations and to those who may have had doubts, we are thrilled to report that all outside commitments have been met and 234 St. George Street, Toronto, is now free of mortgage encumbrances. And furthermore financial administration of the property is taken care of by income from rental to the profession itself.

To say that, within, the building is a hive of industry is putting it mildly. Our

tenants the C.D.A. administration offices, the board of the R.C.D.S. and the O.D.A. executive offices, are all one happy family. The library, in itself a credit to our profession, is rapidly developing a most useful service to our several thousand members. It is our wish that every dentist will at some time visit this friendly and instructive room. It typifies the best

within our profession.

234 St. George Street symbolizes the true spirit of our profession. May we not falter but climb upward to greater heights.

"When a profession puts a limit on what it will do, it has put a limit on what it can do".

R. P. Lowery, Chairman.

Hospital Dental Services

This Committee has done a great deal of preparatory work in the past few years to raise the standard of dental services in hospitals. The institution of such standards depends primarily upon the accreditation of hospitals. The Hospital Dental Services Committee has this year conferred with the above Commission and there is every hope that the dental service will be considered in the final accreditation of a hospital.

The Committee has tentatively approved the Hospital du Sacre-Coeur of Montreal. Full approval shall be given after a personal inspection. Otherwise, the Com-

mittee has confined itself to the answering of numerous letters in regard to the establishment of dental services in hospitals.

The following publications by the Committee are available at C.D.A. Headquarters:

1. Basic Standards for Dental Services in Approved Hospitals.
2. Lectures in Dentistry to Nurses in Training.
3. Supplies and Equipment for Dental Services.

Douglas Tanner,
Chairman.

Art Exhibition at the Canadian Dental Meeting, Saint Andrews-by-the-Sea

There is an excellent chance to display an art exhibit at the Algonquin Hotel during the C.D.A. Convention. Many dentists are good amateur photographers and photographs, as well as oils, sculpture, etc. will be displayed in a room off the lobby where everyone may have a good opportunity to view them. This will be following the C.D.A. Convention tradition of the past few years. Information including a proforma together with shipping stickers may be obtained from Dr. H. F. Bonnell, 183 Princess Street, Saint John, N.B. Entries must be shipped so as to arrive on or before August 25th, 1954. In addition all entries will be returned prepaid, packed by professionals at the close of the exhibition.

DOWN TO THE SHORE IN FIFTY-FOUR

Economic Security

How to Calculate the "Value" of an Insurance Contract

by E. L. R. WILLIAMSON, M.B.E., B.P.A., F.R.E.S.,

Consulting Economist, and Administrator
of the C.D.A. Plan.

Every person likes to feel that when he makes a purchase he has received good value for his money. Since the money used for every purchase is normally obtained through the labour of the purchaser, poor value is the equivalent of working for reduced income.

Poor value is undesirable, but not serious when the article is for one-time use, such as food. It becomes more important as one passes to articles for repeated use such as instruments and clothing, and it further increases in importance as one passes to "durable consumer goods" such as radios, washing machines and motor cars.

"Value" assumes its maximum importance in regard to insurance since it can affect the entire life of the holder, and if it is "poor value" it means that the holder is in effect committing himself to work for reduced fees the rest of his life. For example, should a man of age twenty-five pay only \$1.00 per thousand higher premium when undertaking a very usual contract for \$25,000.00 life assurance, the total *additional cost* to him to retirement age—including interest on the excess premium—would be \$1,941.57 more for exactly the same result.

Very unfortunately, determination of "value" is made less frequently in regard to insurance than it is in regard to consumer purchases of goods or services having very much less far-reaching effect. The reason, of course, is that authoritative determination of value must be based upon intricate calculations which only an Actuary is able to make. The necessary knowledge, training and information is not to be found amongst laymen, including insurance agents.

When an Actuary originally constructs any particular policy, he first deducts the Cost of Operation (See Article I in January issue of the Journal), and then applies the remaining premium to produce the result it is desired to emphasize—e.g., a high cash value at 65 can be produced by lowering the surrender and paid-up values in the early years. Conversely, good early surrender and paid-up values can be secured by proportionate reduction in the later years.

The only definitive solution to the problem of the "value" of an insurance contract is a report by a Consulting Actuary, but there are some tests which the layman can apply and represent reasonably good checks:

1. Adhere to the consideration of the *purpose* for which the contract is being purchased. (See Article III, "Economic Needs vs. Policies"). Do not be diverted by "extras" of dubious practical value.
2. Use a common denominator between the contracts to be compared — i.e., either the results to be obtained from equal premiums or the premium cost of equal results.
3. Carry out the calculation based upon completion of the contract—i.e., if buying a Whole Life contract, what will be the cost at Normal Life Expectancy: 42.57 years at age 35? If Pension, what will be the return at Normal Life Expectancy of 16.45 years from age 65?
4. Reduce the results to return for each dollar invested.
5. Discount claims as to what "dividends" will do—the company has no obligation to go beyond the guaranteed values, and it is a matter of record that "dividends" fluctuate widely over a long period.
6. Give consideration to the "paid-up" and "cash surrender" values, but not too much weight. Remember the contract is not being purchased to be surrendered—that is letting the underwriter "get off the hook." Of the two, the "paid-up"

values are substantially the more important.

A typical comparison should be along the following lines:

Age 37: Equal premium of \$487.70 annually:

	A	B
1. Pension at age 65:	100.00	123.18
2. Cash Option at age 65:	16,240.00	18,736.00
3. Value of Pension at Normal Life Expectancy of 16.45 years at 65:	19,740.00	24,316.00
4. Total Premium Payments: 28 years X \$487.70:	13,655.60	13,655.60
5. Guaranteed Return per \$1.00 Invested:	1.44	1.78

6. Sum Assured in event of premature decease:	10,000.00	12,318.00
7. Guaranteed Cash Values:		
Year 1	nil	160.00
10	4,330.00	4,472.00
20	10,260.00	11,025.00

8. Guaranteed Paid-up Values:		
Year 1	nil	443.00
10	6,480.00	8,056.00
20	11,170.00	14,622.00

Above all, an insurance contract never should be undertaken as a favour to someone, or in return for a presumed but non-contractual benefit or favour. It can prove most costly, and possibly result in personal tragedy.

The Provinces

Prince Edward Island

The **Prince Edward Island Dental Association** unanimously re-endorsed the plan for fluoridation of communal water supplies. It urged that communities in the Province proceed with such a programme without delay.

Dr. A. A. Lockhart of Summerside was elected president of the association for the coming year, and the following officers were also elected: Dr. K. A. McEachern, vice-president; Dr. Heath McIntyre, secretary-treasurer; Drs. William McMurdo, L. I. Duffy, council members.

Manitoba

The Hon. F. C. Bell, Minister of Health and Public Welfare, Province of Manitoba, announced that in order to encourage Manitoba students qualified to enter a faculty of dentistry either in Canada or the United States, assistance may be extended by bursaries under the Dr. E. W. Montgomery scholarship fund. Students receiving such financial assistance will be required to enter into an agreement with the Province to practise dentistry, when graduated, for a specified time in rural Manitoba.

Nova Scotia

Dr. James D. MacLean has been appointed Dean of the **Faculty of Dentistry, University of Dalhousie**.

Born in Regina, Dr. MacLean took his pre-dental course at the University of Sask-

atchewan. Following graduation from the Royal College of Dental Surgeons in 1942, he joined the Royal Canadian Dental Corps and served overseas.

After the war he did some postgraduate study in the U.S., following which he began practising in Edmonton, and was made an associate professor of prosthetic dentistry at the University of Alberta.

Dr. MacLean is active in dental organizations. In 1949 he became chairman of the C.D.A. Committee on Ethics, and a member of the Research Committee. He served as director and secretary of the Edmonton and District Dental Society, and was a member of the Western Canada Dental Society.

Dr. MacLean joined the University of Dalhousie staff in the fall of 1953.

At a meeting of the **Cumberland and Westmorland South Dental Society** held during May, it was agreed to bring the schedule of fees in line with those of other Maritime points.

The Secretary of the Society, Dr. F. Co-meau of Springhill, thanked all the members for their whole-hearted cooperation.

British Columbia

A second **Paedodontic Clinic** sponsored by the B. C. Dental Association's Dental Health Committee, co-financed by the Division of Preventive Dentistry of the B. C. Department of Health and Welfare, was presented recently in Nelson and Cranbrook with Dr. Gordon Jinks of Vancouver as the clinician. Dr. Jinks was accompanied by his chair assistant who demonstrated the role of the

well-trained assistant in saving time and motion for the dentist.

Local five and six-year old children who were patients behaved excellently seeing that the operations were viewed by all the dentists of this part of British Columbia.

The Victoria and District Dental Society at its May meeting elected the following officers for the coming year:

President—Dr. S. F. Miles.
 President-Elect—Dr. Alex Gunning.
 Secretary—Dr. R. H. Trythall.
 Treasurer—Dr. H. M. Hare.
 Directors—Drs. H. Clarke, V. V. Marshall, E. P. Gill.

The Fraser Valley Dental Society at its May meeting was addressed by Dr. David Yeo of the Division of Preventive Dentistry, who gave his impressions of fluoridation and preventive dentistry in general. His talk was authoritative and interesting.

The Vancouver and District Dental Society held its final meeting for the season in the Banquet Room of the Hotel Vancouver when the members partook of a delicious steak dinner. Dr. Beamish introduced the speaker, Mr. Gordon Brandreth, Director of Physical Education in the Vancouver schools. Mr. Brandreth escorted 171 Canadian students to see the Coronation last year. In a rapid-fire address bristling with dramatic effect, he traced the progress of his Canadian youth group through Great Britain, laying emphasis on the inspiring pageantry of the Coronation. Everywhere the students were treated as if they were royalty, and with the motto "First to God and then to the Queen", their visit greatly strengthened the bonds between Canada and the Mother Country.

At the annual business meeting reports of officers and committee chairmen were read and passed. This slate of officers was chosen for 1954-55:

President—Dr. D. H. Warren.
 President-Elect—Dr. L. W. Beamish.
 Secretary-Treasurer—Dr. W. P. Munsie.
 Directors—Drs. R. E. Cline, R. J. O'Neil, J. G. Ryan, M. J. Waterman

The Interior Dental Society held its Spring Convention in Kelowna on Saturday,

May 1st, when Dr. Harold Henderson was in the chair, and Dr. Kenneth Geis proved to be an able secretary and collector of fees.

At the morning and afternoon sessions the clinicians were:

Dr. David Zack, Vancouver—"Exodontia and Dental Surgery in the General Office"

Dr. Murray Krasnoff, Vancouver—"Practical Endodontia"

Dr. David Clarke, Public Health Administrator, told about the procedures used in Kelowna to secure interest in fluoridation. It looks as if Kelowna might lead the province in implementing the fluoridation of its water supply; apparently the whole community is behind it, thus re-inforcing the hands of the Council.

The Kootenay Dental Society was recently organized under these officers:

President—Dr. H. G. Steed, Nelson.
 Vice-President—Dr. W. N. Fraser, Creston.
 Secretary-Treasurer—Dr. N. R. Jennejohn, Nelson.
 Executive Members—Dr. W. C. Bradshaw, Trail; Dr. M. K. Bauman, Cranbrook.

—D.H.M.

Ontario

New Officers Elected

The new president of the **Ontario Dental Association** is Dr. L. R. Braden, Ottawa. Dr. Ira Hamilton in a very capable manner carried out the installation procedure and then turned to the retiring President, Dr. J. H. Johnson, and presented him with his Past President's Jewel. The other members of the Board of Governors are: H. R. Bateman, Toronto, President-elect.; L. M. Grose, Toronto, Historian and Archivist; J. A. Boyd, Stratford; C. L. Strachan, London; F. H. Shepherd, Toronto; J. G. Chalmers, Toronto; E. E. Johns, Kingston; K. M. Phillips, Welland; L. E. Hastings, Ft. William.

Dental Public Health Committee

E. A. White, D. L. Rife, S. T. Peterkin, R. R. Butler, H. A. Swales, Marjorie Jackson, C. G. Monteith, Mark G. Boyes, K. F. Pownall.

Committee on Benevolence

J. A. Bothwell, R. A. Woollatt, Russell Hyde.



GRADUATING CLASS IN DENTAL NURSING, SESSION 1953-54

Front row (left to right)—Elinor Brown, Lois Heintzman, Mary Jane Screaton, Heather Stewart, Donna Abbott, Joanne Gardner.

Second row—Margaret Geale, Thelma Millar, Ruth Elliott, Stella Brooks, Carole Train.

Third row—Barbara Loveys, Jane Ryding, Elaine Fahey, Ruth Bone, Diane McLean.

Ontario Dental Association Convention

What's New at the 87th? That seemed to be the question uppermost in the minds of the nearly 900 dentists gathered in May at the Royal York Hotel, Toronto. To be sure, there were the same number of Essayists, Group and Table Clinicians, but two novel features were inaugurated that gave added interest to the well prepared programme. The first was a symposium during the Essay programme moderated by Dr. C. H. M. Williams, dealing with nutrition as applied to the dental health picture and the effects of systemic conditions on dental health structures. The members of the panel were: Dr. A. L. Chute, Professor and Head of Department of Paediatrics, University of Toronto; Dr. J. Kreutzer, Professor of Preventive Dentistry, Faculty of Dentistry, University of Toronto; Dr. E. W. McHenry, Professor of Public Health Nutrition, School of Hygiene, University of Toronto; and Dr. G. K. Clarke, Paedodontist,

Ottawa. Each member of the panel presented a five minute paper dealing with his particular interest and then the discussion was thrown open to the gathering to deal with such subjects as the following: (1) Can decay of teeth be reduced by reducing the intake of sugar? (2) There are fluorides in certain foods and drinks. Are they poisonous? Do they prevent decay? (3) Does Vitamin C cure diseases of the gums? (4) Do citrus fruits cause erosion of the teeth?

The second was a similar panel sponsored by the Dental Public Health Committee for two hours during the Group Clinicians period. A prepared list of questions was submitted to the audience with the hope that they would excite additional interest from the floor and these were discussed competently by the members of the panel. This panel was moderated by Dr. Wesley J. Dunn, and the leaders of the discussion were: Dr. Frank Compton—Public Health; Dr. G. Nikiforuk—Preventive Dentistry; Dr. E. Bilkey

—Paedodontics; Dr. R. Leuty—Orthodontics. The merit of these two panels was obvious. Here for the first time a man could put his questions before a group and find satisfactory answers.

To the casual observer all phases of the convention went off without a hitch. Beginning with the Dental Public Health breakfast on Monday morning and presided over by the Chairman of the Ontario Dental Public Health Council, Dr. L. E. Hastings, Fort William, the first speaker of the day was Dr. D. V. Currey, Director and M.O.H. of the St. Catharines—Lincoln County Health Unit, who dealt with the subject "the value of dental public health in a health unit programme."

The Monday Dinner-Luncheon gathering was moved by the stirring words of the Hon. John G. Diefenbaker, Q.C., M.P., recently returned from Europe, who clearly demonstrated such a simple way to peace. The Tuesday Dental Public Health Luncheon under the chairmanship of Dr. A. W. S. Wood, was addressed by Dr. Carl L. Sebelius, Director, Division of Dental Health Department of Public Health, State of Tennessee, dealing with the subject of a dentist's participation in a public health programme. It is of interest to note here that seminars conducted by this committee for the past two years in Ontario were as a direct result of the influence and guidance given by Dr. Sebelius. The Ladies programme featured a special trip via Toronto's new subway and bus to the Weston Golf and Country Club for luncheon. Scientific motion pictures were shown continuously for the three mornings and a well selected group of table clinics on Wednesday afternoon completed a well-rounded picture. Special mention should be made of the excellent coverage the convention received in its newspaper, radio and television publicity directed and supervised by Dr. Glen T. Mitton. The Convention Committee under the chairmanship of Dr. H. R. Bateman is to be congratulated for another great success that met with the general approval of those in attendance.

—H.E.L.

On Saturday, May 15, 1954, over 200 dentists met as members of the **Canadian Society of Dentistry for Children** in the Royal York Hotel, Toronto. Following the opening remarks of the president, Dr. Edward R. Bilkey of Toronto, the 4th annual meeting of this organization proceeded with a paper on "Amalgam Technique in Primary and Mixed Dentition" by Dr. Gordon W. Johnston of Toronto. "The Emotional Development of the Child as

Related to Dental Treatment" was discussed in a very interesting and informative fashion by Dr. Roger Myers of the Department of Psychology of the University of Toronto.

Luncheon was served in the Crystal Ballroom and the guest speaker was the Medical Director of the Shadow Brook Health Foundation, Dr. R. Gordon Bell. The title of his address, which incidentally received the most profound interest and attention of the audience, was "Heavy Drinking versus Alcoholism." Dr. Bell was able, in a very short time, to demonstrate most of the current information on alcoholic disease.

Dr. Lorne Scott, the president-elect of the Society, acted as chairman of the afternoon session and introduced Dr. Ralph Sommer, Head of the Department of Endodontics and Radiology, School of Dentistry, University of Michigan, as the first speaker. Dr. Sommer's talk proved very interesting as he elaborated upon some experience with the provision of tantalum roots for some teeth and the sterilization of carious dentine by means of certain antibiotic preparations.

Following this address, a most enjoyable and helpful panel discussion ensued with Dr. M. Armacost Cox, the first honorary member of the Canadian Society of Dentistry for Children, acting as moderator. The main topic of the panel was "Dental Problems in Certain Diseases of Childhood". The panel members were Dr. H. W. Bain on diabetes, Dr. J. M. Darte, blood diseases, Dr. J. D. Keith, heart involvements, Dr. J. B. Macdonald, discussing dental conditions which have medical significance, and Dr. C. P. Rance on kidney disorders.

The panel was the recipient of many questions attesting to the interest it developed.

The newly elected officers of the Society are as follows:

Honorary President: Dr. E. R. Bilkey.
President: Dr. Lorne Scott.
President-elect: Dr. D. L. Rife.
Vice-president: Dr. Gordon Monteith.
Secretary-Treasurer: Dr. R. Anderson.
Historian: Dr. A. W. S. Wood.

—W.J.D.

The Dental Alumni Association of the University of Toronto recently presented Dr. Samuel Hemley's textbook "Orthodontic Theory and Practice" to the Library of the Canadian Dental Association. This is an excellent text and the Alumni recommends that all members read it.

The Alumni Association also enlists the support of the Canadian members for the "Alumni Educational Fund". All donations to this fund should be sent to Dr. Jack Marshall, Belleville, Ontario.

Two Stratford dentists, Dr. H. W. Baker, and Dr. R. Nethercott, were made honorary members of the Ontario Dental Association, and were also presented with desk sets by the **Stratford Dental Society**, in honour of their 50 years of practice in the city.

Dr. I. F. Calder was recently elected president of the **Brockville Dental Society**. Also elected were: Dr. F. M. Bliss, vice president and Dr. D. Goodison, secretary.

Dr. D. H. MacDonald of Toronto was recently elected President of the **Great Lakes Society of Oral Surgeons**.

The following were elected recently to the Executive of the **Ottawa Dental Society**.

Past President: Dr. R. Slemon.
President: Dr. M. M. Derrick.
Vice-President: Dr. A. Slone.
Secretary-Treasurer: Dr. W. D. Bryce.

Directors: Dr. C. Blaney. Dr. C. Bugden. Dr. J. Callingham. Dr. J. McCavour. Dr. T. Regnier. Dr. B. Squires. Dr. H. Young. Lt. Col. G. Shillington.

The following remarks were made by Dr. W. L. Hutton, M.O.H. for the city of Brantford, at the 1954 meeting of the **Brantford Fluorine Committee**:

It is now twelve years since the subject of fluoridation was first considered in the City of Brantford. It is ten years since Dr. Bradley Linscott conducted his pre-fluoridation dental surveys which established the base line of dental health in Brantford, from which we have been able to judge the changes which have since taken place. It is almost nine years since sodium fluoride was added to the City water supply. It is six years since the Department of National Health and Welfare undertook a long term comparative study of dental health in Brantford with sodium fluoride mechanically added to the water supply, Stratford with fluoride salts added to the water supply from underground sources, and Sarnia with a fluoride-free water.

This Fluorine Committee meeting year by year has noted with keen interest the regular and uninterrupted improvement in the dental health of Brantford school children. Our debt to Dr. Linscott, for his annual dental survey, is great.

The comparative studies of Dr. H. K. Brown, on behalf of the Department of National Health and Welfare, have rounded

out the scientific aspects of the Brantford Fluorine experiment by providing the controls which are essential for any final judgment.

Brantford was not the first City to fluoridate its water supply. We were preceded by a few months by Grand Rapids, Michigan and Newburgh, N.Y. These cities like Brantford, have regularly examined and tabulated the dental changes occurring since the beginning of fluoridation.

The results of these momentous and parallel fluoridation experiments are now a matter of history.

They have been checked, measured, analysed, confirmed and approved by innumerable scientific bodies. They have met that crucial scientific test, when repeated they give the same results. The various fluorine experiments, are, therefore, both factual and pragmatic. It is now accepted in the scientific world that fluoridation offers an impressive body of concrete, detailed and convincing facts in favour of the proposition that fluorine will prevent more than half the dental caries, which invariably occurs in communities, with a public water supply which is lacking in fluorine; and it does this without any detectable injury to health. You will notice that this statement gives no absolute assurance as to what will take place in the future. No one who values his intellectual integrity would be willing to predict with certainty, the future course of events.

The present bizarre fluorine controversy which started in the United States and, which has spread to Canada, would be utterly unwarranted if the argument were confined to the facts of fluoridation as they are presently known. From the standpoint of pure science, nothing is ever really settled. In any experiment conducted according to the rules of science, all that can be reported is the results to date. The distant and uncertain future is a mystery. It is precisely because of this fact that the doorway is always open for the speculators and the pretenders.

It may be that the human race lives in danger of invasion by ill-disposed and powerful creatures from outer space. You can neither prove nor disprove that the earth is the only inhabited place in the Universe. But you can speculate, and pretend that you know, and Orson Wells demonstrated that out of such sensational and nebulous ideas you can create chilling fear and bewildered panic.

It is true that there are areas of temporary ignorance in regard to fluoridation, but nothing is more certain than that our knowledge will grow. It is, however, sheer hy-

pocrisy to pretend that the speculators of to-day have produced the slightest evidence which would justify sensible people rejecting a proven method of preventing pain and decay in the teeth of children.

Lincoln put the matter in a different manner. "I believe," he said in a letter to the editor of the *Illinois Gazette* on August 11, 1846, "that it is an established maxim of morals that he who makes an assertion without knowing whether it is true or false is guilty of falsehood, and the accidental truth of the assertion does not justify or excuse him."

Mother Nature is its own witness as to the value and safety of fluoridation. This is what the *Journal of the Canadian Dental Association* has to say in its issue of November, 1953—"Many thousands of Canadians and millions of people elsewhere have consumed, during their total lifetimes, water fluoridated to approximately one part of fluoride to a million parts of water, from underground deposits, and have thereby benefited by a reduction of about two-thirds in the attack rate of tooth decay, without any ill-effects discoverable by either the dental or medical professions".

The history of public health contains many familiar examples of the emotional and deep-seated human reactions, which have been conjured up by the speculators and pretenders of by-gone days. The sound and fury of past controversies about pasteurization of milk and vaccination against small-pox have died away. Their impressive memories remain, as strange illustrations of how readily fear may be aroused over health issues, which impinge directly upon individual lives.

In the dark reaches of the human mind there is a free-wheeling fear which is part of our human inheritance. It is essentially an unreasoning anxiety, which can and does attach itself to unrelated and different issues. The reign of fear is never permanent. Distrust and anxiety may hold back progress here and there, but in the end, courage will return, vain speculations will be rejected and common sense will prevail.

In the past, dental caries has been the most prevalent of all diseases from which mankind suffers. The present evidence indicates that fluoridation, with silent and painless efficiency, will drastically reduce the caries problem and raise the general level of public health.

Alberta

The May Meeting of **The Central Alberta Dental Society** was held in Red Deer on Wednesday, May 26.

The following officers were elected for the 1954-1955 term:

Vice-President—Dr. J. H. W. Moore.
President—Dr. L. Oatway.
Secretary—Dr. G. Travis.

Elected to the Executive Committee were: Dr. M. Boyce, Dr. D. Culham, Dr. A. Goodman, Dr. G. Page.

Dr C. D. Husband, reporting on Dental Health Week said that Central Alberta had a very successful programme this year.

The Guest Speaker Dr. M. Lipkind, Calgary, gave an interesting talk on the treatment of the periodontal pocket.

—A.L.G.

The regular meeting of the **Central Alberta Dental Society** was held in Red Deer on April 28th, with Dr. Lorne Oatway acting as chairman.

Dr. C. D. Husband outlined the programme for Dental Health Week and committees were appointed for radio broadcasts, lectures to service clubs and school groups, and newspaper coverage.

The **Edmonton and District Dental Society** elected Dr. R. H. Blaquiere as president, at a recent meeting.

Other officers elected were: Dr. A. D. Fee, president-elect; Dr. A. H. Lane, secretary; Dr. C. G. Duke, treasurer; Dr. S. G. Geldart, social convener; and Drs B. P. Mass, W. A. Quigley, and William Orobko, directors.

Dr. R. D. Cameron paid tribute to Dr. Orobko, retiring president, on behalf of the Society.

Quebec

The annual staff dinner meeting of the **Dental Faculty, McGill University** was held on May 21st in the Faculty Club, Montreal. Dr. John W. Gerrie, Head of the Department of Oral Surgery, acted as chairman and with the assistance of some of the members of his staff, reported on the present status and the hopes for the future of his department.

Prior to the discussions by the Oral Surgery Department, Dean D. P. Mowry briefly outlined the position of the Faculty at the present time. Dean Mowry noted that although there are only three full time members of the teaching staff, there are some eighty-one part time teachers for one hundred and forty two students; this, he stated, is the reason for McGill's reputation as a clinical training school.

In discussing the Oral Surgery Depart-

ment, Dr. Gerrie noted that the requirements for teaching are based on three things: Undergraduate teaching; Post-graduate education; and Research. With regard to the first, he felt that McGill was doing its job in teaching the student exodontia, anaesthesia, dental and oral surgery and in making the student cancer conscious. Dr. Gerrie felt, however, that the faculty is sadly lacking in the latter two.

Dr. J. McCarthy summarized the experience of each student in the field of dental oral surgery and showed how, with the assistance of the Photography Department, it is possible to have all students "See" difficult and unusual cases even though not actually at the chair.

With regard to the field of post graduate teaching, Dr. R. Wiener suggested that firstly, one week refresher courses should be made available. Secondly, half day courses spread over a period of weeks would be required; and thirdly, residences in Oral Surgery leading to certification should be provided; such graduate students to major in several or all basic sciences. Dr. Wiener pointed out that obviously such courses must depend on the facilities available.

Dr. M. Rogers in discussing the possibilities of research felt that at the present time there is too much "dream research" going on; the researcher should try to be more practical and realistic. Dr. Rogers asked—Are we making full use of our present knowledge? Are we making full use of our present facilities? Should we not have more liaison with other universities? Are we too segregated in our own departments? Should we not have more and better liaison between departments?

Following the report from the Oral Surgery Department, Dr. J. McCutcheon presented his final advance report on the new dental clinic. After thanking Dr. W. Walford for his work as first chairman of the new clinic, Dr. McCutcheon stated that the new clinic has 12,000 square feet of floor space, contains 39 student dental cubicles, completely equipped at the cost of \$200,000. The clinic, which is the finest in North America, will be ready the 1st of September, but due to circumstances beyond our control, the faculty may not move in for some time—possibly not until May 1955. Due to these circumstances, the Faculty's 50th Anniversary celebration would not be held in September as originally hoped.

The meeting closed with the presentation of an excellent sound, colour film on "Diagnosis of Oral Cancer."

R.F.H.

Dr. M. B. Archambault, Dr. H. H. Pearson and Dr. A. D. Richardson, founders of the **Montreal Endodontia Society** were presented with silver plaques by the members at the society's Tenth Anniversary Dinner held in the Reform Club of Montreal on May 28th. The presentations were made by Dr. S. A. MacSween who is himself one of the original members of the society.

The Honorary President of the Society, Dr. Ralph F. Sommer, who was the guest speaker at the afternoon and evening meeting, delighted the members by presenting the Society with a plaque on which will be inscribed the names of all members who have or will have served the Society in an outstanding manner. Dr. Sommer's gift was received on behalf of the Society by the retiring president, Dr. George Zimmerman.

Following the dinner, the annual elections were held with Dr. Vincent Tremblay being elected president, Dr. Eugene Dorion vice-president, and Dr. Dave Shizgal, secretary-treasurer.

In the afternoon and evening sessions, Dr. Sommer covered almost the entire field of endodontics and dwelt at length on some of the newer aspects of the subject such as the use of tantalum root implantations, a method of sterilization of carious dentine, and some observations concerning the nature of periapical lesions and their method of treatment.

With regard to large periapical lesions, Dr. Sommer pointed out that following hundreds of cases of biopsies, only rarely were cysts encountered—the vast majority proving to be granulomatous material. In the past, he pointed out, it was common practice to surgically enucleate such areas which often necessitated the devitalization of sound teeth in the vicinity of the "area." The speaker showed several cases where the treatment had consisted of making a small opening at or near the mucobuccal fold and the insertion of a small piece of rubber dam cut in the shape of a capital "I". This is changed every two weeks until it can no longer be inserted, usually requiring only a comparatively short time before it can no longer be inserted; periodic x-rays will also show the rapid closure of the "area". A very practical point was stressed by the speaker when he noted that it takes but a few minutes to change the drain.

Dr. Sommer dwelt at length with the problem of the various sizes of silver points. One of his graduate students had spent considerable time in measuring the sizes of silver points and the corresponding files and found that almost invariably, the silver point was considerably larger than the file. With regard to the use of files, it seemed to the writer that he favoured the

use of files to exactly fill the canal apex, with the use of gutta percha to complete the filling process.

With regard to the ever-present problem of sterilizing infected dentine where the removal of all of it would frequently expose the pulp, Dr. Sommer reported the results of experiments performed by some of his original graduate students. Bacteria removed from infected dentine was incubated on twelve different culture media and after some trial and error, it was found that a mixture of camphorated para-monochlor-phenol and penicillin would destroy them. The technique used was the removal of the first layer of carious dentine and the insertion of 50,000 units of penicillin barely moistened with camphorated para-monochlor-phenol. Over this was placed a layer of wax or liquid collodion followed by a cement filling (the cement must NOT come in contact with the penicillin). This may be left as long as convenient and then a filling is inserted. In over two hundred cases it was found that sclerozing of the dentine occurred. (This can be observed in the x-ray as a hardening or whitening, of the carious dentine). In no case did a "blow up" occur.

Following Dr. Sommer's presentations, Dr. J. P. Lantier presented the speaker with a travelling bag on behalf of the members. The speaker was introduced by Dr. M. Goldenberg.

R.F.H.

The annual installation dinner of **The Mount Royal Dental Society** was held on Tuesday evening, May 4th, 1954 in the private dining room at Ruby Foo's. The installation of the new officers of the Society for the coming year, and the awarding of life membership to one of our senior members, were the main order of business. President R. M. Wiener was in the chair.

Dr. Wiener called on Dr. H. H. Pearson to install the incoming Executive. Before presenting the newly elected officers to the Society, Dr. Pearson paid tribute to the members of the Executive whose terms of office had been successfully completed. He then introduced the new executive, consisting of Dr. I. B. Hyams, President; Dr. S. Silver, Vice-President; Dr. M. R. Lang, Secretary; Dr. A. W. Bazerman, Treasurer; Dr. A. J. Colle, Assistant Secretary; and Dr. M. H. Toker as Historian Archivist. The elected members of the Executive Committee are to be Drs. B. L. Hyams, A. Leith, L. Lang, D. Solomon, and S. Cripps.

The President then called on Dr. B. L. Hyams to present the certificate of life

membership to Dr. Nathan Lands, signifying the completion of thirty-five years in the practice of dentistry and over thirty years of membership in the Society. Dr. Hyams paid tribute to Dr. Land's efforts on behalf of the Mount Royal Dental Society in its first years, at which time he served as Treasurer and then as secretary, for consecutive terms of office.

Dr. Wiener called on Dr. I. B. Hyams to take the Chair, as he relinquished office. Dr. Wiener expressed his appreciation to the members of the past executive for their co-operation and to the membership at large for their support. In accepting the Chair, President I. B. Hyams praised the work done by Dr. Wiener and his executive in the past year. He thanked the Society for their confidence and for the favour bestowed on him, and said that with the support of the new executive, he hoped to further the progress and programme of the Society.

Dr. D. T. Shizgal, formerly past president, was called on to make a presentation to Dr. R. Wiener on becoming the immediate past president.

Before adjourning, the new president complimented Dr. Leon Lang, Chairman of the Entertainment Committee, for his arrangements for the evening, and the membership at large warmly supported that expression of thanks.

A.J.C.

Dr. Albert Laferriere was awarded a Certificate of Fellowship by the American Academy of Dental Medicine on May 16th at the concluding session of the academy's eighth annual meeting held at the Penn Sherwood Hotel in Philadelphia.

Dr. Laferriere was honored by more than 300 members and fellows from all parts of the world meeting for a program devoted to the diagnosis and treatment planning of oral diseases.

Internationally prominent dental and medical authorities presented their latest finding during the three-day session. The academy, which has a membership of more than 600, met in Montreal last year.

(The Montreal Star).

Dr. Louis J. Rosen has been elected president of the **Montreal Society of the American Academy of Dental Medicine**.

Other officers are: Dr. Victorien Dube, president elect; Dr. Wilfred J. Johnston, secretary-treasurer; and Drs. R. M. Wiener, Louis Lepine, E. S. Dorion, executive.

Dr. Frank L. Burns has been appointed a delegate to the national body.

In Memoriam

John William N. Shepherd.—Dr. J. W. N. Shepherd, aged 74, passed away on May 19th. A graduate of Oregon in 1902, he began practice in Kelowna in 1905. He was the first resident dentist in Kelowna, B.C., and one of the first in the Okanagan Valley. He retired from active practice in 1949.

When he first arrived in Kelowna it was not uncommon for him to journey on horseback to centres as far north as Enderby and as far south as Oliver.

Dr. Shepherd served the city of Kelowna as an alderman, school trustee, and member of the board of trustees of the Kelowna Hospital Society, holding the presidency of the board for a time. He was also a member of the original Kelowna volunteer fire department executive.

Dr. Shepherd was a charter member of the Gyro Club and of the local Canadian Legion. He was active as past president and former secretary of the Kelowna Rotary Club.

He leaves his wife, Alice Marjorie; one daughter, Mrs. E. Cooke of Sechelt, and one son, Kenneth of Kelowna.

Walter Lindsay Sawyer.—Dr. Walter Lindsay Sawyer of Dryden, Ontario, died in Winnipeg on May 14th, following a lengthy illness. He was 64 years of age.

Born in Sherburne, Ontario, Dr. Sawyer graduated from the Royal College of Dental Surgeons in 1919. For 35 years he practised in Winnipeg, then in Brooks, Alberta, before taking up practice in Dryden in 1951.

Dr. Sawyer was a member of the Canadian Legion, Dryden branch; Assiniboine Golf Club; local curling and golf clubs, and was formerly on the executive of Deer Lodge Curling Club.

Surviving are his wife, Willa Mildred, and a brother, Earl.

Myron S. Betts.—Dr. Myron S. Betts of Grandview, Manitoba, passed away in April, at the age of 82.

Dr. Betts was born in Cavalier, N.D., and came to Canada in 1899. He began practising in Deloraine, Man., moved to The Pas in 1910, and finally settled in Grandview.

He was a member of the Masonic and IOOF lodges in Deloraine and Grandview, and was active in local sporting circles.

Dr. Betts is survived by his wife, Gertrude; a son, Frank, of Edmonton; a daughter, Mrs. L. Mieyette, of St. Vital; and a sister, Mrs. G. Bowering of Winnipeg.

Oliver M. Hart.—Dr. Oliver M. Hart of Gull Lake, Saskatchewan, passed away in May following an operation.

Dr. Hart had practised in Gull Lake since 1921.

Herbert John Hodgins.—Dr. Herbert John Hodgins of Islington, Ontario, died on May 31st, at the age of 71.

Dr. Hodgins was born in Lucan, and received his early education in that town. After graduating from the Royal College of Dental Surgeons in 1905, he practised in Seaforth and Lucan until world war I, when he served first with the C.E.F., 161st Battalion, and then with the Canadian Army Dental Corps attaining the rank of Captain.

Following the war, Dr. Hodgins practised in Toronto, working part-time with the Dental Services Division of the Ontario Department of Health. In 1938 he joined the full time staff of the Provincial Government.

Dr. Hodgins was a past master of the A.F. & A.M., and was a member of St. Matthews Anglican Church, Islington.

He is survived by his wife, the former Gladys Ross Henderson; two daughters, Nora Ross of Toronto, and Mrs. J. A. Milne of Niagara Falls; and two sons, John L. Derry and G. Morley, of Toronto.

Antoine Landry.—Dr. Antoine Landry of Quebec City died on April 24th, at the age of 69.

Dr. Landry is survived by his wife, the former A. Desrochers; and five daughters, Marguerite, Yvette, Fernande, Corinne and Madeleine.

He was the brother of J. Albert Landry, Rev. Mother Ste-Clothide of the Ursuline Monastery, and Mme. Jos. Pineault.

J. Ewart Gee.—Dr. J. Ewart Gee of Victoria, B.C., died on May 29th in St. Joseph's Hospital at the age of 59 after a month-long illness.

He graduated in 1917 from Northwestern University, Chicago, and served with the Canadian Dental Corps during the First World War. After discharge he began private practice in Fernie, and in 1935 moved to Victoria.

Always an active participant in the affairs of organized dentistry, Dr. Gee was a past member of the Council of the College of Dental Surgeons of B. C., and a past president of the Victoria Dental Society. He was also a member of Xi Psi Phi fraternity, a member of Quadra Lodge, A.F., & A.M., and a member of the local Kiwanis Club.

While a member of the Dental Health Committee he was instrumental in inaugurating dental services for remote areas in British Columbia.

Surviving are his wife, a son Eric of Montreal, his father and brother.

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1954	St. Andrews-By-The-Sea, N.B.	September 5th - 8th
1955	Toronto, Ontario	May 15th - 18th
1956	Banff, Alberta	June 3rd - 6th

Future Events

Date	Function	Location	Officer	Address
Sept. 5-8	Canadian Dental Assoc. & New Brunswick Dental Society Convention	St. Andrews by the Sea	Dr. S. K. Wetmore	146 Germain St., Saint John, N.B.
Sept. 18	Convention of Northern Ontario Dental Association	North Bay	Dr. W. L. Boland	355 Ferguson St., North Bay, Ont.
Sept. 19-20-21	Eastern Ontario Dental Association Convention	Kingston	Dr. M. M. Derrick	Suite 105, 183 Metcalfe St., Ottawa, Ont.
Oct. 8	Dental Alumni Annual Meeting	Toronto	Dr. Ben Gross	816 Bathurst St., Toronto
Oct. 13- Nov. 4	Annual Meeting of American Institute of Dental Medicine	Palm Springs, Calif.	Miss Marion Lewis	2240 Channing Way, Berkeley 4, Calif.
Oct. 19-22	Montreal Dental Clubs' Annual Fall Clinic	Montreal	Dr. Bruce Ward	1414 Drummond St., Montreal, P.Q.
Nov. 6	American Academy of Gold Foil Operators	Miami, Fla.	Dr. Gerald Stibbs	School of Dentistry, University of Washington, Seattle 5, Wash., U.S.A.
Nov. 6-7	American Academy of Implant Dentures	Miami Beach, Fla.	Dr. Wm. E. Barb	668 E. Maple Road, Indianapolis, Indiana
Dec. 5	Mid Annual Meeting of American Academy of Dental Medicine	New York City	Dr. William Greenhut	124 East 84th St., New York 28, N.Y.

Short Graduate Courses

Date	Course	Location	Address
Sept. 9-10	Biennial Fall Refresher Course	University of Alberta, Edmonton	Dr. H. A. Grimsrud, University of Alberta. Faculty of Dentistry, Edmonton, Alta.
Sept. 13-15	Anatomy as Applied to Dentistry	University of Toronto	The Dean, Faculty of Dentistry, University of Toronto, 230 College Street, Toronto 2-B, Ont.
Nov. 29- Dec. 3	Dental Radiology	as above	as above
Jan. 17-21 1955	Periodontics	as above	as above
Jan. 23- Feb. 6	Orthodontia	Temple University	Dr. Louis Herman, Director of Postgraduate Studies. Temple University Dental School, 3223 North Broad St., Philadelphia 40, Pa.
Jan. 26-27-28	Clinical Occlusion	as above	as above

Notices

New York University College of Dentistry announces a two year full time postgraduate course in Periodontia and Oral Medicine in preparation for certification and teaching. For information write: Secretary, Postgraduate Division, New York University College of Dentistry, 209 East 23rd St., New York 10, N.Y., U.S.A.

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Journal

DE L'ASSOCIATION DENTAIRE CANADIENNE

Pathologie des alvéolites

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L'extraction des dents est considérée par la profession dentaire comme une opération chirurgicale. Elle requiert un équipement approprié et une technique d'opérations bien définies. Beaucoup de temps et d'études ont été consacrés à définir ces techniques. Mais en ce qui concerne la guérison post-opératoire, la question semble avoir été délaissée, si ce n'est en ces dernières années. L'extraction d'une dent peut-être très facile à celui qui connaît parfaitement les techniques. Mais, parfois, le dentiste ne se trouve-t-il pas en présence d'une complication qui le déroute. Parmi les nombreuses complications post-opératoires que le dentiste doit résoudre, il en est une, assez fréquente, qui jusqu'ici n'a pas encore été parfaitement élucidée. On en connaît bien toutes ses manifestations; mais en ce qui regarde son étiologie et son traitement, on ne s'accorde pas toujours. Cette complication n'est autre que l'alvéolite.

L'alvéolite, désignée sous le nom de "dry socket" par les américains, constitue pour le chirurgien-dentiste un véritable problème post-opératoire. Sous ce nom,

on désigne généralement les algies qui ont pour siège l'alvéole dont on a extrait la dent. Selon la terminologie médicale, elle signifie une inflammation de la paroi alvéolaire dont la douleur n'est qu'une manifestation (1).

Dans le cas d'une vraie alvéolite, selon le docteur Berger (2), il existe trois grandes caractéristiques: l'absence du caillot sanguin, nécrose de l'os alvéolaire, une douleur interne, constante ou intermittente. De plus, l'alvéolite peut-être infectée. C'est ce qui fait dire à certains auteurs qu'elle ressemble à une ostéite localisée (3) ou à une ostéomyélite (4). A l'examen clinique, l'alvéole est dépourvue de son caillot sanguin et de tissus granuleux. La structure entière de l'os s'effrite. Il y a une nécrose définie de la paroi alvéolaire (4). Selon sa nature (8), elle proviendrait d'un désordre nutritif résultant d'un dommage vasculaire comprenant le système capillaire de l'alvéole.

Si la nature de l'alvéolite est très bien connue, il n'en est pas ainsi de son étiologie. Elle fut l'objet d'un grand nombre d'hypothèses et encore aujourd'hui la ou les causes directes demeurent douteuses. L'étude et les constatations cliniques ont

amené les auteurs à une énumération de tout un ensemble de facteurs jouant un rôle plus ou moins direct dans le processus pathologique d'une l'alvéolite. Ces agents étiologiques peuvent se résumer comme suit:

1. Chute du caillot sanguin (5).
2. Infection de l'alvéole provoquée par l'introduction de streptocoque et de staphylocoque (5).
3. Introduction de corps étrangers dans l'alvéole (5).
4. Trauma (5).
5. Solutions anesthésiques.
6. Extraction d'une dent en présence d'un stage aigu de traumatisme ou d'infection (6).
7. Complication constitutionnelle, telle le diabète, syphilis, grossesse (6).
8. L'emploi d'une instrumentation aseptique (6).
9. Les patients qui délogent le caillot avec leur langue et qui crachent souvent (5).
10. Infiltration de salive dans l'alvéole (6).
11. Curetage trop prononcé de l'alvéole (5).
12. L'emploi d'un rince-bouche (5).

Parmi ces facteurs, deux retiennent plus particulièrement l'attention. Ce sont la chute ou la désintégration du caillot sanguin et le trauma. Selon la définition du "dry socket," ces deux facteurs semblent se rapprocher le plus de la cause directe. En effet, l'absence du caillot sanguin est une des premières constatations cliniques d'une alvéolite. Chaque fois que l'on dit "dry socket" l'on peut dire absence de caillot sanguin. De plus, l'alvéolite se présente le plus souvent chez les patients qui délogent le caillot avec leur langue et qui crachent souvent (6).

Le trauma est considéré par certains auteurs comme la seule cause directe (7). Cette hypothèse peut se justifier, si l'on fait une distinction dans le genre de traumatisme. Il peut-être envisagé sous deux ordres: il est vital ou mécanique. Par traumatisme vital, il faut entendre tout agent bactérien, tels que les staphylocoques et les streptocoques, ou encore les conditions générales du patient. Quant au traumatisme mécanique, il serait causé soit par le patient, soit par le dentiste.

Il serait la cause de la chute ou de la désintégration du caillot sanguin. Cependant le traumatisme mécanique n'est pas toujours justifié. Il arrive souvent lors d'une extraction de traumatiser l'alvéole, soit parce que la dent est difficile à extraire, soit dans l'ablation d'une racine au moyen d'élévateur ou dans le curetage d'un alvéole. Et même dans ce cas, il ne se produit pas d'alvéolite (7).

La cause, dit le docteur Berger, (3) ne peut pas toujours être attribuée à un seul facteur. Selon leur ordre, on pourrait les grouper sous trois grands groupes:

1. L'aseptie.
2. L'action toxique des drogues et des agents anesthésiques.
3. le trauma.

Le "dry socket" est habituellement causé par une infection et une inflammation de l'os alvéolaire ou par une infection chronique résidant dans l'os depuis un certain temps (6). L'aseptie constituerait alors un facteur important dans le développement du "dry socket." Elle peut-être latente dans les tissus ou encore être introduite durant l'opération (7).

L'action toxique des agents anesthésiques ne fut pas moins discutée. Tous ont été tenus responsables: la cocaïne, la novocaïne, l'épinéphrine et l'adrénaline. Cette hypothèse est basée sur deux constatations: l'ischémie causée par les anesthésies locales (7) et l'alvéolite se présente le plus souvent après l'anesthésie locale et en particulier après une infiltration subgingivale (7). Mais cette hypothèse n'explique pas comment l'alvéolite peut se produire même sans anesthésie (1) ou sous anesthésie générale (7). Mais, si l'on considère l'état général du patient, cette hypothèse peut se justifier. En effet, certains patients peuvent être réfractaires à un anesthésique et, dans ce cas, la solution produirait un trouble vasculaire.

Tous ces agents qu'on a soupçonnés être la cause directe du "dry socket" n'en seraient que des facteurs prédisposant et favorisant le développement pathologique. Une seule cause serait plus certaine, c'est

la destruction du caillot sanguin. Mais le Dr Py (1), qui a observé les mêmes douleurs après un nouvel écoulement sanguin et la formation d'un nouveau caillot, rejette cette hypothèse. Selon lui (1), la seule cause serait l'inflammation de l'alvéole ne pouvant provenir que d'agents infectieux se produisant sur la portion du ligament adhérent à la paroi alvéolaire. Cette hypothèse ne peut être complètement justifiée, car l'inflammation n'apparaît pas seule. Il lui faut une cause déterminante qui est, selon la définition, l'infection ou l'irritation. Si le caillot sanguin demeure en place et favorise la guérison normale de la plaie, comment expliquer l'inflammation? Au contraire, si le caillot ne se forme pas ou s'il est détruit, il y a beaucoup de chances d'avoir une infection ou encore une certaine irritation de la paroi alvéolaire, puisque celle-ci est exposée à l'air et à l'infiltration de tout corps étranger. Dans ce cas, l'inflammation serait la cause de la douleur et non de l'alvéolite elle-même.

Si nous considérons que la destruction du caillot sanguin est le résultat d'une action néfaste d'agents microbiens ou autres, l'absence du caillot ne peut-être la cause directe de l'alvéolite. Il n'en resterait qu'une et ce serait le traumatisme, à condition toutefois que l'on conserve la distinction entre le traumatisme vital ou mécanique. Il serait la cause de la destruction du caillot et, par la suite, ouvrirait le chemin au processus pathologique de l'alvéolite.

Conclure que l'absence du caillot sanguin ou le trauma est la seule cause, serait un peu osé. Toutefois, je considère ces deux facteurs comme les plus importants dans le développement du "dry-socket." Avec le Dr Berger (7), j'affirme qu'il ne faut pas chercher dans le développement d'une alvéolite une seule et unique cause mais un ou plusieurs facteurs.

Le processus pathologique d'une alvéolite est l'un des sujets qui a été le plus difficilement atteint. Son étude requiert une connaissance parfaite d'histologie et de physiologie. Cependant, les manifesta-

tions cliniques ont été très bien décrites. Parmi les travaux et les expériences qui ont été faits, ceux de Euler et de Meyer semblent être les plus concluants.

Après une extraction dentaire, deux cas se présentent: ou la plaie laissée par la rupture des tissus périodontaires s'organise normalement ou elle ne se guérit pas. Dans le premier cas, la réparation suit son cours normal et, après quelques jours, la régénérescence tissulaire est en pleine évolution tandis que, dans le deuxième cas, la réparation est entravée par quelques agents et requiert un traitement spécial. De plus le patient ressent de vives douleurs.

La guérison normale, post-opératoire, après l'extraction d'une dent, s'effectue dans une période de trente jours (10). Le processus, conclut Euler, suit la voie suivante: hémorragie (2), coagulation (3), thrombose des vaisseaux sanguins de l'alvéole (4), début d'organisation de fibrine dans le caillot (5), prolifération de l'épithélium au-dessus de la plaie (6), résorption des tissus traumatisés (7), formation du nouvel os. Ces conclusions résultent d'une étude faite sur des chiens. Cependant, chez l'homme, les recherches histologiques n'ont été faites que plus tard. En 1932, Steinhard (11), a rapporté trois cas obtenus par la nécropsie. Dans le premier cas, la mort était due à une leucémie, trois semaines après l'extraction. La plaie était couverte d'un épithélium. Le fond de l'alvéole était rempli d'os non calcifié et recouvert d'une couche de tissus de granulation. Le deuxième cas fut observé trois mois après l'extraction. Le fond de l'alvéole était profondément réduit par la présence du nouvel os. La portion centrale contenait encore des restes du caillot original. L'épithélium et le tissu sous-épithélial recouvrait la plaie.

Comme on le voit par les travaux de Steinhard, le processus de la guérison expérimentale de Euler ressemble beaucoup au processus que l'on retrouve chez l'homme avec cette différence qu'il est plus lent. De plus, les examens ont été faits sur des sujets⁶ malades puisque la

mort suit de près. Si le système est affaibli par quelque maladie, la guérison peut être retardée.

Le principal facteur de la guérison normale est donc le caillot sanguin. C'est à partir de sa formation que tout le processus de la guérison s'effectue. Le caillot est nourri par une circulation sanguine s'organisant en lui-même. Les éléments cellulaires, tels les fibroblastes et les ostéoblastes, envahissent le caillot. Ils concourent à la transformation du tissu conjonctif en tissus osseux. La guérison normale, pour les raisons que nous avons énumérées, ne suit pas toujours son cours normal. L'état pathologique est encore bien connu cliniquement, mais quand à son processus histologique, peu d'études en ont été faites. Il faut s'en reporter aux études de Meyer (12), qui a provoqué artificiellement une pathologie de la plaie alvéolaire. La provocation fut faite en plaçant dans l'alvéole un grain de barley, un tampon, ou encore en infectant la plaie avec des streptocoques ou des staphylocoques. Les unes ont reçu un traitement antibactérien, tandis que les autres ont suivi la voie naturelle de guérison. Le traitement consistait en une irrigation au peroxyde d'hydrogène, le 2^{ème} jour après l'infection, et de l'insertion d'un tampon iodé et saturé d'une solution de chlorophénol camphré. Il constata que, 6 et 8 jours après l'infection, il n'y avait pas de différence entre la plaie traitée et l'intraitée. Ce n'est qu'au 12^{ème} jour qu'il avait une certaine différence. Le docteur Claffin (13), dans son étude histologique, apporte les conclusions suivantes:

- a) Le "dry socket" peut être produit expérimentalement sur les chiens.
- b) Le caillot sanguin est le début de la régénération tissulaire.
- c) Le 3^e jour, les fibroblastes envahissent le caillot. Les ostéoclastes se retrouvent au fond de l'alvéole.
- d) Au cinquième jour, il y a un début d'ossification au fond de l'alvéole et, au trentième jour, la guérison est complète.
- e) La régénérescence épithéliale est retardée quand la plaie est recouverte par un tampon.

L'étude histologique du processus pathologique est un traité fort intéressant au point de vue scientifique. Mais, ce qui intéresse au plus haut point le chirurgien-dentiste, c'est le processus clinique. En effet le plus important c'est de diagnostiquer le "dry socket." Les données sont assez précises et il est difficile de tomber dans l'erreur. L'alvéolite, selon la définition, est un terme employé couramment par la profession dentaire pour désigner une profonde douleur et une nécrose de l'os alvéolaire. Elle peut être infectée ou non infectée (14). Dans les deux cas, les symptômes sont les mêmes sauf que, dans l'une, il y a envahissement de l'alvéole par les bactéries.

Dans le cas d'une alvéolite non infectieuse, la complication est plutôt légère et sans danger, mais, habituellement, le patient ressent de vives douleurs. Dans ce cas, ne serait-ce qu'un trouble vasomoteur (15)? Elle se différencie nettement des douleurs réactionnelles, parfois violentes, qui succèdent presque immédiatement à l'extraction et coïncide avec la disparition de l'anesthésie. La douleur apparaît deux à trois jours après, violente et souvent irradiée à la face.

A l'examen, l'alvéole apparaît entourée d'une muqueuse congestionnée, souvent vide et sèche, d'où le nom "dry socket," avec des parois osseuses blanchâtres, exsangues, parfois comblées d'un caillot brunâtre qui se détache facilement. L'écouvillage, toujours très douloureux, ramène le coton imbibé d'une rassie rougeâtre, d'odeur fade.

Souvent aussi, l'alvéole est dépourvu de caillot. Celui-ci, n'étant pas nourri par suite d'une absence d'irrigation sanguine meurt et tombe de lui-même. L'alvéole, exposé à l'air, favorise l'action traumatique sur les terminaisons nerveuses de l'os et de l'alvéole.

La condition non infectieuse est le vrai type d'alvéolite. C'est celui que l'on rencontre le plus souvent. Mais il arrive dans bien des cas qu'une autre complication s'ajoute: l'infection. Cet état est plus

grave, car il y a destruction par les agents bactériologiques.

Outre les symptômes d'une vraie alvéolite, s'ajoute une odeur fétide et désagréable. Cette odeur provient des débris laissés par la désintégration du caillot sanguin et des débris alimentaires ou autres provenant de la cavité buccale.

Les principaux agents d'une alvéolite infectieuse sont les bactéries, telles que les streptocoques et les staphylocoques (16). Le milieu dans lequel se développe l'alvéolite est très favorable à l'infection. Le processus suit un développement plus ou moins défini et présente différents symptômes:

1. Retard dans la formation du caillot sanguin ou son absence complète.
2. Pénétration dans l'alvéole
 - a) de bactéries provenant.
 1. de la bouche.
 2. du manque de soin durant l'opération.
 3. d'une pathologie systémique du patient.
 - b) Débris alimentaires et autres
3. Nécrose du tissu osseux et en particulier de la lamina dura.
4. Inflammation.

Cliniquement parlant, le vrai "dry socket" est dépourvu du caillot sanguin normal de tissu granuleux (17). Cette absence du caillot correspond à un état pathologique pouvant provenir d'un traumatisme quelconque ou de l'état organique du patient. Le traumatisme porte sur la paroi osseuse de l'alvéole. Il est causé par une extraction trop brusque ou par le curetage de l'alvéole. La paroi de l'alvéole est brunie ce qui a pour effet de bloquer les capillaires sanguins servant à la nutrition de l'os. Le sang, ne pouvant pas nourrir le caillot, se désagrège et tombe; l'alvéole est ouvert à toute intrusion infectieuse. Quant aux conditions organiques du patient, c'est un facteur retardant la formation du caillot. Ces facteurs peuvent être nombreux et dépendent de la condition générale du patient. Le patient peut être hémophile, déficient en vitamines D ou dans un état de faiblesse

générale. On sait que le taux de calcium et de phosphore est un élément nécessaire dans la coagulation sanguine. Une altération de ce taux, accompagnée de celle du fibrinogène, de la prothrombine et des plaquettes sanguines, entravent la coagulation normale. Ainsi, l'alvéole demeure susceptible à l'intrusion d'agents infectieux que se mêlent au sang.

L'entrée des bactéries peut être directe ou indirecte, suivant la voie que suit l'infection. Elle peut être organique ou locale. L'opération du chirurgien et la bouche du patient constituent les principales voies locales. La bouche est un milieu absolument septique. La salive renferme un grand nombre de bactéries et toutes sortes de débris. Ces agents peuvent infecter la plaie qui n'est pas complètement refermée. Quant à l'opération du chirurgien, elle dépend des conditions septiques dans lesquelles son travail s'accomplit. L'instrument autant que le champ opératoire requiert une stérilité parfaite. Souvent, les constatations cliniques décèlent à l'origine du "dry socket" un état aseptique.

L'aseptie ne provient pas toujours d'une négligence de l'opérateur. Ce cas est plutôt rare de nos jours. Le plus souvent, elle est causée par une infection latente dans les tissus ou dans le sang. L'infection latente virulente mérite une attention spéciale (7). Elle échappe souvent à la connaissance du patient, parce qu'elle n'est pas douloureuse, et de l'opérateur qui ne peut pas toujours la déceler dans son examen clinique. Seule la radiographie, dont l'usage est plutôt restreint, peut la mettre en évidence.

La septicité est donc le facteur primordial dans le cas d'une alvéolite infectieuse. L'alvéole est envahi par ces agents infectieux et destructeurs. Ils s'attaquent à l'os et surtout à la lamina dura (7). Le processus ressemble beaucoup à celui d'une ostéomyélite localisée (15). La structure entière de l'os est détruite. Il y a une nécrose définie des structures particulières de l'os alvéolaire. L'alvéole est rempli de débris de toutes sortes. Ces débris proviennent du métabolisme bac-

térien et de la nécrose de l'os alvéolaire. Une telle destruction est la cause d'une inflammation des tissus périodontaires et provoque chez le patient une profonde douleur. Cette douleur serait causée par l'irritation des terminaisons nerveuses.

En pratique dentaire, lorsqu'un tel trouble se présente, le chirurgien peut avoir recours à un grand nombre de médicaments. Ces médicaments ont tous été expérimentés. Les uns apportant des résultats plus ou moins efficaces. Cependant certains peuvent retenir plus particulièrement l'attention. Voici donc ceux dont l'efficacité a le plus été discutée.

1. (13)
 - a) L'alvéole doit être nettoyé avec une solution de peroxyde d'hydrogène ou de permanganate de potasse et ensuite irrigué avec une solution saline chaude ou antiseptique.
 - b) L'alvéole est ensuite soigneusement rempli avec un pansement de gauze iodoformée suivant la sévérité du cas.
 - c) Emploi de drogues pour combattre la douleur.
2. (20)
 - a) Assécher l'alvéole.
 - b) Saturer la cavité avec une solution de nitrate d'argent 10%.
 - c) Attendre 3 à 4 minutes.
 - d) Appliquer 3½% d'iode — iodure d'argent répété.
 - e) Stériliser la cavité et isoler la terminaison nerveuse.
3. (21)

Provoquer un nouveau caillot sanguin (sang d'une veine autour de la plaie).
4. (22)
 - a) ne pas cureter.
 - b) nettoyer l'alvéole.
 - c) gauze iodé avec des substances analgésiques.
5. (23)

Ce traitement proposé par Elwell comprend trois groupes différents d'alvéolites.

 - a) groupe aseptique:

irrigation avec solution saline — assécher soigneusement et isoler avec des rouleaux de coton, provoquer un caillot sanguin (Wasserman) donner des instructions au patient.
 - b) groupe demi-septique:

suppuration claire sans débris. même procédure
emploi local de sulfadiazine ou de sulfathiazol.

- c) septique:

suppuration active, débris.
Le traitement est le même qu'une ostéite localisée.
- a) drainage de l'alvéole. Il est important d'avoir un contrôle parfait de l'infection.
- b) irrigation saline chaude et pansement imprégné de sédatifs.

Souvent, lorsqu'un patient se présente avec un tel trouble, le dentiste est parfois embarrassé sur la nature du médicament. Elwell a fait une distinction entre l'alvéolite infectieuse et non infectieuse. Le traitement peut être considéré de deux façons: l'une, chirurgicale et l'autre, médicamenteuse.

Le traitement chirurgical consisterait dans la provocation d'un nouveau caillot sanguin (Wasserman). Cette technique va directement à la cause, qui est l'absence du caillot. L'opération consiste à prendre le sang dans une veine du bras ou encore à provoquer une légère hémorragie des tissus environnants. Cette technique comporte certains désavantages, même si elle semble efficace. La première opération présente une difficulté technique et demande une instrumentation spéciale. La deuxième, quoique plus simple, peut donner naissance à nouvelle infection si les tissus gingivaux sont dans un état pathologique.

Le traitement par les médicaments peut être aussi efficace, mais sera de plus longue durée. Il soulagera la douleur du patient, mais, en ce qui regarde la régénération des tissus, elle sera plus longue. Le Dr Claffin (9), dit que la régénération de l'épithélium est retardée quand la plaie de l'extraction est entourée d'un pansement. Le patient sera obligé de faire plusieurs visites pendant deux ou trois semaines.

En pratique, certains auteurs proposent le curetage de l'alvéole, mais ce traitement ne pourrait être fait sans discrimination et ne pourrait résoudre le problème. Cependant, avec un soin précis, il peut être employé dans un cas d'infection.

Quelque soit le mode de traitement que l'on adopte, la condition la plus essentielle est d'obtenir une aseptie parfaite de l'alvéole traumatisé. Il faut soulager le pa-

tient et lui prodiguer tous les soins nécessaires à une prompte guérison.

Avec la connaissance des causes et du processus pathologique, est-il possible de prévenir cette complication? Souvent, le chirurgien peut l'éviter; mais il arrive des cas où, même après tous les soins requis, l'alvéolite ne peut lui échapper. Aujourd'hui, avec les récentes découvertes et les nouveaux procédés de stérilisation, le chirurgien est plus en mesure de prévenir cette complication. Egalement, les techniques d'opération ont été mises à point et permettent au dentiste d'opérer avec un minimum de traumatisme, facteur important dans le déclenchement de l'alvéolite.

Afin de prévenir cette complication, le chirurgien devrait favoriser l'hémorragie en faisant une certaine pression sur les bords de l'alvéole, puis faire mordre sur un tampon une dizaine de minutes et même plus. Il devrait instruire son patient et lui faire certaines recommandations post-opératoires. Ces recommandations pourraient s'énumérer ainsi:

1. Appliquer un sac de glace dans le cas d'extraction massive.
2. Ne pas rincer la bouche, si ce n'est vingt-quatre heures après.
3. Prendre un laxatif au coucher.
4. Suivre son patient jusqu'à la guérison complète.

Les conditions favorables ou non favorables à la vie du caillot peuvent être produites par deux agents: le corps et le dentiste (24). Considérons d'abord la méthode naturelle. Il y a deux principaux types de réaction dans l'os autour de la dent: un effet raréfiant ou dilatant et un effet de condensation. L'effet raréfiant est une condition favorable à la guérison, tandis que l'autre ne l'est pas. La première produit des changements de décalcification avec des espaces osseux plus larges que le normal et le deuxième produit une calcification plus serrée et, par suite, des espaces plus petits. Le premier favorise la circulation sanguine et le deuxième le diminue. Durant la coagulation, le caillot se contracte. Quelquefois, il se détache de l'os alvéolaire et se prive

de son irrigation sanguine, qui peut permettre l'invasion des bactéries. Dans ce cas, le caillot peut être détruit. La coagulation dans l'alvéole d'une dent pyorrhéique ou enlevée chirurgicalement exerce une pression sur tissus mous, lorsque le caillot se contracte, ceci gardant l'alvéole scellé et conservant une source de sang supplémentaire. La guérison est habituellement rapide et moins douloureuse après l'extraction d'une dent pyorrhéique à cause du caractère des tissus supportant ces dents et l'absence de trauma. De telles dents ont une membrane périodontaire épaisse, une profondeur réduite de l'os alvéolaire constitué de tissus mous. La profondeur réduite de l'os alvéolaire et l'épaisseur de la membrane périodontaire font que l'extraction s'effectue avec le minimum de traumatisme. Le tissu mou partiel de la paroi alvéolaire et la membrane périodontaire épaisse favorise une abondance de sang au caillot.

Les types condensés, d'autre part, font une paroi plus rigide, ce qui nécessite une plus grande force pour enlever les dents. Il transmet un plus grand traumatisme à la membrane périodontaire et aux parois de l'alvéole. De plus, la membrane périodontaire est plus mince et tend à devenir atrophiée. Sous cette condition, la probabilité au "dry socket" est plus marquée. Une autre condition non favorable du corps est la formation d'une couche additionnelle de ciment sur la racine. Le traumatisme de la membrane périodontaire et de la paroi alvéolaire durant l'extraction de la dent hypercémentée est considérable. L'opération chirurgicale peut favoriser la guérison normale.

Toutes ces conditions qui influencent la guérison post-opératoire peuvent être diagnostiquées par un examen clinique et radiographique minutieux. En examinant attentivement tous les tissus périodontaires et leur état fonctionnel pour les raisons que je viens d'établir, lorsque les conditions pré-opératoires semblent défavorables, le dentiste peut aider à la guérison normale en réduisant le traumatisme par la méthode chirurgicale.

L'état général du patient est un autre facteur qui doit attirer l'attention du dentiste dans son examen pré-opératoire. Si le patient est affaibli par une maladie organique, il est dangereux qu'il fournisse pas les efforts nécessaires pour combattre un début d'infection ou encore apporter les éléments nécessaires à la formation du caillot sanguin.

L'alvéolite est un trouble peu connu en dehors de la profession dentaire, souvent lorsque cet état post-opératoire se présente, le dentiste en est tenu responsable. Il est donc important pour lui d'en connaître parfaitement la nature et surtout d'en connaître le traitement. Ainsi, il pourra mieux instruire son patient et lui prodiguer adéquatement les soins requis.

SOMMAIRE

1. L'alvéolite est une ostéite localisée, causée par absence du caillot ou par un traumatisme mécanique ou vital. L'alvéolite peut être infectieuse ou non infectieuse.
2. La guérison normale d'une plaie dentaire s'effectue dans les trente jours qui suivent l'extraction.
3. Dans tout traitement d'une alvéolite, l'aseptie est un facteur primordial,

quelque soit la technique que l'on a choisie.

4. La prévention de l'alvéolite est assurée par un examen attentif des tissus péri-dentaires. La méthode chirurgicale, dans un cas difficile, peut favoriser la guérison post-opératoire.

BIBLIOGRAPHIE

- 1) Odontologie 1951, 30-1-51, Dr Py, page 17.
- 2) Principle and Technic of the Removal of Teeth, Berger, page 343.
- 3) The Jnl. of the A.D.A. Vol. 31, May 1944, page 615.
- 4) Oral Surgery, Winter, page 193.
- 5) Surgery of the Mouth and Jaws, Bourgoyne, pages 239-240.
- 6) Oral Surgery, Mead, page 1374.
- 7) Principle and Technic of Removal of Teeth, Berger, page 344.
- 8) Surgery of the Mouth and Jaws, Bourgoyne, page 239.
- 9) The Jnl. of the A.D.A. Vol. 23—1936, page 959.
- 10) The Jnl. of the A.D.A. Vol. 23—1936, page 945.
- 11) The Jnl. of the A.D.A. Vol. 23—1936, page 952.
- 12) The Jnl. of the A.D.A. Vol. 23—1936, page 955.
- 13) Oral Surgery, Mead, page 1375.
- 14) Oral Surgery, Winter, page 194.
- 15) Technique Chirurgicale Bucco-Dentaire, Pratique Stomatologique, page 167-168.
- 16) Surgery of the Mouth and Jaws, Bourgoyne, page 239.
- 17) Oral Surgery, Winter.
- 18) Oral Surgery, Mead, page 1374.
- 19) Oral Surgery, Winter.
- 20) Oral Surgery, Mead.
- 21) Vol. 31 No: 9-1944.
- 22) Principle and Technic of Removal of Teeth, Berger, page 345.
- 23) Surgery of the Mouth and Jaws, Bourgoyne, page 1376.
- 24) The Jnl. of the A.D.A. Vol. 24 1829/1936.

Société des Chirurgiens buccaux du Canada

La Société des Chirurgiens buccaux du Canada est à former ses cadres. Tout dentiste, qui exerce la spécialité de chirurgie buccale au Canada depuis vingt-cinq ans ou plus, est prié d'envoyer son nom et son adresse et tout autre renseignement d'intérêt spécial au Secrétaire, le docteur J. F. Methven, 234 rue St-Georges, Toronto.

Nouvelles de l'Association

Réunion annuelle de l'A.D.C.
à St-André-sur-mer

On demande aux dentistes, qui ont l'intention d'assister au congrès de St-André-sur-mer, du 5 au 8 septembre, de s'inscrire de bonne heure sur les formules qui leur sont parvenues. Les organisateurs du Congrès prévoient que l'Hotel Algonquin suffira à peine à loger tous les congressistes.

On peut profiter de tarifs spéciaux sur les

chemins de fer en se procurant un certificat à cet effet au Secrétariat de l'A. D. C. Ceux qui doivent s'y rendre par avion constateront avec plaisir qu'on a pris des dispositions spéciales à leur intention. On prie les congressistes d'indiquer leur mode de transport pour qu'on puisse leur faciliter leur voyage.

Pamphlet sur la fluoruration

Le Comité d'Hygiène dentaire publique vient de publier un pamphlet sur la fluoro-

ration, intitulé "Facts", Cette publication a été rédigée en langage simple à l'intention du public et son but est de répondre à des questions suscitées par la question du fluor. On peut s'en procurer un certain nombre pour une somme nominale, en écrivant à l'Association dentaire canadienne, 234 St-Georges, Toronto.

Etude sur l'assurance-santé

A sa réunion d'avril, le Comité d'Etude sur l'Assurance-Santé a consacré une partie de ses délibérations à l'élaboration et à la

rédaction de divers changements touchant la question d'assurances et de paiements à tempérament pour les traitements dentaires. Ces changements seront soumis pour approbation à la réunion annuelle de l'automne. Le Comité s'efforce d'amasser des statistiques précises sur la santé dentaire pour ensuite élaborer des projets. On a considéré avec grande attention des rapports soumis par différents comités provinciaux et aussi les rapports émanant de l'enquête entreprise sur l'état de santé de la population canadienne.

Congrès de l'Association dentaire canadienne et de la Société dentaire du Nouveau-Brunswick



Echoppe de souvenirs à St-André-sur-mer.

Cette échoppe située à St-André-sur-mer a un caractère maritime. Il y a une foule de ces petites boutiques attrayantes à St-André, où aura lieu le congrès annuel de l'A. D. C., les 5, 6, 7, et 8 septembre prochain.

Encore cette année, il y aura une exposition artistique de travaux exécutés par des dentistes ou les membres de leur famille; ces expositions ont toujours été fort goûtées au cours des congrès passés.

On invite tous les membres de l'Association, et tous ceux qui vivent dans leur entourage immédiat, à exposer leurs peintures à l'huile, aquarelles, sculptures, photographies, pièces de tissage, etc. Pour tout renseignement, on doit écrire au docteur Hugh F. Bonnell, 183 Princess Street, Saint-Jean, N.-B.

De quelques considérations actuelles sur la salive

par Dr G. NICOLAS

Il n'est pas indifférent de prélever de la salive à n'importe quel moment de la journée. Chez un individu même normal, la composition, la quantité, la viscosité, etc., peuvent présenter des variations suivant le matin ou le soir, le fait d'être à jeun, d'approcher d'un repas ou d'être en digestion, le fait d'être calme ou sous le coup d'une émotion. On connaît même des variations saisonnières et l'on sait que l'âge n'est pas indifférent.

Aussi, si certains auteurs ont utilisé des stimulants (pain, alcool, paraffine, acides même) en vue d'une sécrétion plus abondante, ils ont (sans le vouloir), faussé les résultats de leurs recherches, car selon les stimulants employés, on peut obtenir chez un même individu à 5 minutes de distance, des résultats totalement différents.

S'il est un qualificatif convenant bien à ce liquide, c'est certainement celui d'**effervescent**, c'est-à-dire de quelque chose de vivant, en transformation constante; aussi les examens sont-ils très subtils et doivent-ils être effectués aussi rapidement que possible.

Nous ajouterons que si le sang est moins complexe que la salive c'est qu'il est moins influencé par le système nerveux.

Cette salive avec juste raison est appelée par certains auteurs, "liquide buccal ou humeur buccale"; le terme de salive étant réservé uniquement au liquide puisé non dans la bouche, mais à l'ouverture des glandes salivaires.

Appareil salivaire

Il ne se réduit pas aux trois glandes types, mais comprend toute une série d'amas glandulaires, distribués sous les muqueuses labiales, jugales et linguales, dont il est difficile de déterminer la fonction exacte.

Mais, quelle que soit leur importance, elles émanent toutes de la muqueuse buc-

cale, vaste arborisation plus ou moins complexe, que dans les ouvrages théoriques on divise en trois types:

1. Le type séreux : parotide, glandes de Weber, glandes de la pointe de la langue.
2. Le type muqueux : glandes de la luette, glandes palatines, glandes de la base de la langue.
3. Le type mixte : glande sous-maxillaire à prédominance séreuse et glande sublinguale à prédominance muqueuse.

De nombreuses observations *sialographiques* ont montré la perméabilité particulière du parenchyme des glandes sous-maxillaires et de la parotide chez l'enfant et surtout l'extrême variabilité des images avec de très nombreux lobes accessoires.

Ainsi, pour la glande sous-maxillaire, certains lobes mylo-hyoïdiens ont l'importance de la glande elle-même et à l'orifice du canal de Sténon on trouve l'origine de canaux de lobes accessoires.

Ce *polymorphisme* est extrêmement important à connaître lors d'une affection salivaire et surtout dans le cas d'une exérèse chirurgicale complète.

Sécrétion salivaire

Indépendamment de son rôle dans la digestion, elle doit fonctionner comme protectrice de la cavité buccale. Il suffit en effet que des corps toxiques ou simplement nuisibles y soient introduits, pour qu'immédiatement une abondante salivation s'ensuive éliminant ou neutralisant le corps étranger. Si, par exemple, nous absorbons un acide, la sécrétion se fait particulièrement alcaline et riche en albumines dont le pouvoir tampon est bien connu.

Une étude faite par *Burgi* sur les *régulations neuro-végétatives*, précise les subtilités du mécanisme amenant la sensation de soif due peut-être à la sécrétion des petites glandes buccales. La régulation de

cette sécrétion est en effet d'une finesse admirable, si l'on songe que la composition aussi bien que l'abondance de la salive, s'adaptent de près à la consistance et à la nature chimique des mets absorbés.

Or, si le centre du contrôle salivaire est l'hypothalamus, le système nerveux para-ou orthosympathique est loin de rester indifférent. Ce serait lui qui donnerait le signal d'alarme déclenchant la sécrétion et dans un deuxième temps, celle-ci serait entretenue par le mécanisme hormonal de la sécrétine.

En 1908 déjà, J. Demoor mettait en évidence les substances salivaires spécifiques, capables de provoquer la sécrétion d'une glande au repos. Elles ont du reste été retrouvées depuis lors dans le sang veineux de ces organes et leur action étant nulle sur les glandes à sécrétion externe, force est de leur accorder une spécificité. Ces substances seraient donc élaborées à la faveur de la sécrétion, la solliciteraient et par le fait même en assureraient la continuation.

Depuis Pavlov, nous savons que cette sécrétion peut aussi avoir lieu par simple réflexe conditionnel.

Constituants minéraux ou organiques

<i>Cations</i>	<i>Anions</i>	<i>Composés organiques</i>
Calcium	Chlorures	Protides
Magnésium	Fluorures	Glucides
Sodium	Phosphates	Lipides
Potassium	Nitrates	Vitamines
Fer	Sulfates	Hormones
	Carbonates	Enzymes

En outre, on y trouve des sulfocyanures, de l'urée, ou de l'acide urique.

L'eau dissout et évacue les agents nocifs. La *ptyaline* transforme les amidons en sucre, mais de trop grandes quantités arrêteraient le processus et empêcheraient la présence d'acide lactique libre. Quant aux *chlorures* de sodium et de potassium, ils augmentent la saveur des aliments et dirigent la sécrétion salivaire. Ainsi, lors d'une excitation, ils servent de diluants. Les *phosphates* transforment l'acide lactique en lactates et durcissent les couches externes de l'émail. La *mucine* décom-

pose les bases. Les *sels basiques* de calcium et de sodium neutralisent les acides. Le *calcium* est lié aux nerfs sympathiques des glandes salivaires; quant au *potassium*, il est lié au parasymphatique, antagoniste de l'adrénaline.

Les *fluorures* passent dans la salive moins rapidement que les chlorures. Quant à l'*iodure de potassium*, il y passe très aisément, de même que l'*alcool*, à tel point que l'on peut y doser le degré d'intoxication d'un individu, aussi bien que dans le sang (*Friedmann*). Retenons spécialement la présence d'*hormones* dans la salive.

Certains auteurs voudraient considérer les glandes salivaires comme productrices d'hormones particulières; des expériences faites avec d'autres glandes, quant aux interférences en résultant, tendraient à le prouver.

Quoi qu'il en soit, chez la femme par exemple, on trouve des hormones ovariennes et préhypophysaires. Bien plus, par une réaction chimique sur la salive, il est possible de déterminer un état de grossesse. A ce propos, nous signalerons qu'autrefois, dans certaines régions, pour faire disparaître une aménorrhée, la malade prenait un morceau de pain, qu'une femme indisposée avait préalablement imprégné de salive.

Ferments de la salive

Etudiés particulièrement par *Eggers Lura*, leur liste impressionnante ajoute encore à la complexité du liquide, que nous essayons de nous représenter.

Ainsi d'après cet auteur on aurait trouvé à ce jour:

- deux lipases décomposant les graisses,
- trois phosphatases agissant sur les phosphates,
- une amylase décomposant l'amidon,
- une maltase décomposant le maltose,
- deux peptidases décomposant l'albumine,
- deux protéinases agissant sur les vraies protéines,
- une peroxydase,
- une indophénoloxydase,

une catalase,
une enzyme coagulant le sang,
plusieurs enzymes antibactérielles
(lysozymes, inhibines, etc.),
plusieurs deshydrogénases,
des sulfatases, rhodanases, mucinases,,
etc.

Nous ne retiendrons que les *phosphatases salivaires*, dont le rôle très discuté, mais qui auraient une action synthétisante dans la minéralisation dentaire externe. Sans doute *Rore* nie un rapport quelconque entre les caries et les phosphatases. *Czernyei* conteste la théorie d'Eggers Lura selon laquelle la carie serait due à une action enzymatique salivaire.

A notre point de vue, chacun a raison dans ce vaste domaine, car les échanges vitaux sont si subtils, qu'à vouloir les détailler pour n'en étudier qu'un seul en particulier, c'est méconnaître complètement les interactions inévitables qui se passent.

Les phénomènes vitaux ne peuvent se résoudre à de simples statistiques ou à des formules algébriques. C'est toute une orchestration dont on peut sans doute extraire tel instrument pour l'étudier pour lui-même, mais tant que l'on ne se met pas à la place du chef d'orchestre, on n'a rien compris.

Certains auteurs ont cherché s'il était possible d'*exciter* ou d'*inhiber* la production d'enzymes. Jusqu'à maintenant, seul le magnésium serait un activateur, alors que parmi les inhibiteurs, on trouve: les cyanures, les oxalates, les thiocyanates, les arsénates, les pyrophosphates, le mercure, l'acide iodacétique, les fluorures, etc.

Par contre, le toluène, le thymol, le chloroforme, les salicylates, l'hydroquinone, l'acide ascorbique, la cystéine, seraient sans effet.

Enfin la salive contient plusieurs principes antibactériens, dont les principaux sont les lysozymes, les inhibines et les mutines. Le *lysozyme*, découvert par *Fleming*, lyse les bactéries saprophytes du milieu buccal et a une action non néglig-

geable sur les micro-organismes pathogènes qu'il inhibe sans les lyser.

Il est beaucoup moins actif dans la salive que dans le blanc d'oeuf, le lait et surtout les larmes où il suffit de 1/40.000 pendant une heure à 45°, pour obtenir une lyse complète, alors que 1/300 est nécessaire dans une salive.

Ce lysozyme a été trouvé dans la salive de 43% d'individus en pleine santé (*Balikow*); mais sa présence est très variable chez une même personne. Il s'agit donc encore, d'un caractère labile pouvant conduire les auteurs à des résultats différents. Son origine serait à trouver dans les leucocytes polynucléaires, présents dans la salive.

La propriété antibactérienne de ce liquide buccal serait donc attribuée aux leucocytes qu'il contient.

Autre propriétés

Mais il faut ajouter que la salive même aurait un pouvoir chimiotactique sur eux, pouvoir qui bien qu'atténué, ne disparaît ni par centrifugation, ni par filtration. *Diez* a montré que les éléments sanguins étaient attirés vers les tubes capillaires contenant de la salive, beaucoup plus que vers ceux contenant simplement des exsudats de tissus.

Un autre effet de la salive est celui d'augmenter la perméabilité des capillaires, probablement grâce à l'hyaluronidase. Si on injecte de la salive sous la peau d'un rat et qu'ensuite, on injecte du bleu de Trypan, celui-ci fuse beaucoup plus rapidement là où la salive a été injectée.

Cependant ce principe est moins actif dans la parotide que dans la sous-maxillaire.

De plus, la salive réduit la pression sanguine de l'animal. Par elle aussi, la coagulation du sang se trouve accélérée. Un mélange de 10, 20 ou 50% de salive avec du sang, accélère sa coagulation dans les proportions de 20, 40, 70%. Si ce phénomène n'a aucune valeur en chirurgie, cependant pour les blessures buccales, il n'est pas sans intérêt et l'animal qui lèche

une plaie le pressent certainement par instinct.

Enfin, il existe dans la bouche, un **antagonisme microbien** non négligeable. Ainsi entre le staphylocoque et certaines bactéries encapsulées.

Ces diverses propriétés de la salive nous expliqueraient les raisons pour lesquelles les suppurations en bouche sont rares, excepté bien entendu les infections en profondeur, les abcès périapicaux, les poches parodontosiques, etc.

Nous avons cité tout à l'heure les *inhibines* dont la connaissance est due aux travaux de *Dodd* et dont l'importance semble extrême, puisqu'elles sont capables de détruire, de lyser ou de transformer la plupart des microbes pathogènes. Ainsi, par exemple, les porteurs de germes diphthériques seraient simplement des sujets dont la salive renferme une quantité anormalement faible d'inhibines. En effet, sous l'influence de cette substance, les germes diphthériques sont transformés en pseudo-diphthériques et par conséquent deviennent non pathogènes. La question alors subsiste de savoir comment, d'une façon pratique, connaître la quantité d'inhibines dans une bouche et suivant le cas, comment l'augmenter.

Le miel naturel se comporterait comme une inhibine. Or sans rappeler son utilisation en maints domaines depuis la plus haute antiquité, souvenons-nous combien la salive de l'abeille joue de rôle dans sa fabrication. Quant à la "gelée royale" dont il est beaucoup parlé actuellement quant à ses vertus particulières, sans insister, il vaut cependant la peine de la citer ici.

La salive a donc un **effet protecteur** indéniable contre l'infection. Ainsi, le bacille bovin de la tuberculose (*Relleston*) croît très difficilement dans l'organisme

quand il a été en contact avec de la salive. Chose même plus curieuse, si l'on y trouve des agglutines du bacille *acidophilus* (*Hadley* et *Bunting*) celles-ci sont en quantité plus grande chez les individus résistant à la carie dentaire que chez les non-résistants.

Ceci est à mettre en parallèle avec les expériences de *Schranz* et *Scriver* qui plongent des fragments de dents dans une salive additionnée de diverses substances. Ils les y laissent 21 jours et les ayant pesés avant et après, notent les pertes de poids.

Si, avec des sulfamides, on trouve une perte de 25,74%, avec la pénicilline on ne trouve que 1,77%. Par contre les fluorures assurent un gain. Mais fait curieux, les salives de bouches à caries florissantes montrent une action moins dissolvante que les salives immunisées.

Vouloir accuser la salive de provoquer la carie, c'est envisager le problème d'une façon par trop simpliste. Car il faut accepter après ces recherches, qu'il y aurait un **organisme de défense** dans les bouches susceptibles de carie qui agirait tout comme certains agents de défense, présents dans d'autres parties du corps. On en vient alors à se demander si l'usage de dentifrices ne peut pas être un moyen favorisant d'une certaine manière la carie, puisque ces dentifrices peuvent détruire ou éliminer les organismes délicats que la nature a pourvus comme système de défense contre les processus destructeurs de la dent.

Quant aux *mutines*, elles ont les mêmes propriétés que les *inhibines*; elles semblent plus thermostables et transforment certaines qualités des bactéries, par exemple, en les faisant changer de couleur.

—*Médecine et Hygiène*, 15 avril 1954

La Chicago Dental Society constate que la profession dentaire est en train de se morceler à outrance en spécialités parce qu' "être spécialiste veut dire honoraires élevés". Les finissants des facultés dentaires regardent l'orthodontie avec envie, parce qu'ils croient que cette spécialité est des plus rémunératrices.

Plan d'assurance dentaire inauguré aux Etats-Unis

Un plan d'assurance dentaire, le premier du genre aux Etats-Unis, a été lancé récemment, à New-York. Il s'agit d'un plan semblable à ceux d'assurance-santé.

Ce nouveau plan a été organisé par le Group Health Dental Insurance, Inc., une organisation sans but lucratif. Le premier geste de l'organisation a été d'envoyer aux 12,000 dentistes de 16 comtés des Etats de New-York et du New-Jersey, une lettre les invitant à participer au plan.

Voici comment le plan fonctionne: Quand une personne désire en faire partie, elle subit un examen complet de la bouche. Les travaux dentaires qui doivent être faits le sont aux frais du souscripteur, mais, si le coût des soins dépasse \$150, l'assurance paie la différence.

Quand les dents de la personne sont en bonne condition, tous les travaux effectués par la suite sont payés par l'assurance, sauf quelques exceptions pour des familles ayant un revenu de plus de \$5,000 par année. Tout ce qu'il en coûte, c'est la prime mensuelle.

Les dentistes qui participent au plan reçoivent des honoraires fixes de la compagnie.

Pour être admissible, il faut faire partie d'un groupe d'au moins 40 employés d'une même firme dont 75 p. 100 du personnel acceptent la participation.

Le souscripteur a le choix de participer seul au plan ou d'en faire bénéficier sa famille en payant des primes plus élevées. Les prix de la prime varient de \$1.65 pour une personne à \$6 pour une famille.

Le plan procure, en partie, les services dentaires suivants aux honoraires ci-après: examen, y compris les radiographies, \$8.00; deux prophylaxies et deux examens, par année, \$3.00 et \$5.00; obturations en amalgame, de \$3.00 à \$7.00; dentiers complets, \$75.00 à \$90.00; ponts fixes, jusqu'à \$100.00; extractions, \$3.00.

Aux Etats-Unis

La plus ancienne revue américaine disparaît.—*Dental Items of Interest*, dont nous avons annoncé récemment le 75e anniversaire en même temps que la mort de son directeur, le docteur Paul Belding, suspend sa parution. C'était une publication pleine d'idées originales; elle laisse un vide dans la presse professionnelle.

Le nombre des membres de l'Association dentaire américaine s'est élevé, en 1953, à 80,127, en progression de 2,500 sur l'année précédente.

Le nombre des étudiants en chirurgie dentaire est passé de 7,274 en 1945, à 12,370 en 1953, y compris environ 300 étudiants étrangers.

La proportion des étudiantes est beaucoup plus faible qu'en Europe: une femme pour 120 étudiants du sexe masculin. Il existe aux U.S.A. 42 écoles dentaires. C'est le *New York University College of Dentistry* qui a le plus grand nombre d'élèves, soit 609. (Le nombre des élèves d'une de nos écoles parisiennes n'est-il pas supérieur?) L'état de New York possède un dentiste pour 1,135 habitants. Il n'en est pas de même pour les autres états de l'Union, ou ce nombre varie entre 3,000 et 5,000.

L'Information dentaire, le 25 mars 1954.

Journal

OF THE CANADIAN DENTAL ASSOCIATION

Planning and designing removable partial dentures*

by A. H. SCHMIDT, D.D.S., Col. U.S.A.F.

THE field of removable partial denture construction presents numerous complicated problems that have challenged the ingenuity of some of the finest minds in dentistry. Many outstanding men have devoted their best talents to the study and solution of these problems and have contributed materially to the progress that we have made in this field.

On the whole, this progress has been empiric rather than scientific. In its very nature removable partial denture construction does not readily lend itself to scientific methods of study. There are many reasons for this, such as the infinite variety of patients, their different states of health, and multitudinous methods of treatment and construction available to us, and the great length of time needed, usually many years of periodic observation (both clinically and roentgenographically) before scientific conclusions can be drawn. Last, but not least, there re-

mains the difficulty, if not impossibility, of obtaining an adequate number of control cases needed to check the results of one method of treatment against those of others, or of no treatment at all. All these factors combined seem to preclude the likelihood of obtaining data based on really scientific methods of study, comparable with those commonly employed in other fields of dentistry. However, when success in this field is measured by our ability to have restorations function over a period of ten or more years, without damage to the remaining teeth and their investing tissues, it must be clear that our work is really based upon practical and not upon methods that can be called truly scientific.

This explains why we have, with few exceptions, improved our work through the trial and error method as the result of clinical experience gained in daily practice. It is impossible to standardize procedures in a manner to fit all modifications; but there are fundamentals of design and fortunate for us these fundamental principles do have universal appli-

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cation, even though the removable partial denture problems are so varied.

If removable partial denture prosthesis is to take its proper place as a part of dental health service, much of the confusion now existing must be resolved into some sort of orderly approach to the problem. The student, whether he is undergraduate or graduate, is bewildered by the multiplicity of attachments, clasps, stress breakers and tooth types. He is confused by an infinite number of technical procedures, all of which are claimed by their sponsors to be panaceas for some specific type of restorative treatment. As a result of this situation the great majority of dental practitioners are now accepting the partial denture as a short, intermediate step to full dentures and are relegating the greater part of the problem to the commercial laboratory. These laboratories at best can only provide a solution to part of the engineering side of the problem. All too frequently the appliances designed and fabricated by commercial laboratories are much more harmful to the patient than the condition which they are supposed to correct.

Dr. Victor L. Steffel* states that proper design and adequate support are of primary importance, and he classifies all authors into three general groups—relative to their ideas.

The one school of thought favors the use of stress-breakers. Stress-broken cases require clasps or frictional attachments, as some form of stress-breaker, with a minimum of tooth engagement.

The advantage of stress-breakers are: the resiliency of a stress-breaker added to that of the periodontal membrane makes the sum of the two comparable with the resiliency of mucosa. The relief from tipping strain prevents resorption about the abutments, and the intermittent pressure of the bases massages the mucosa, providing physiologic stimulation which results in thickening of the cortical layer

of bone and soft tissue cell proliferation.

The disadvantages are: the construction is more complex and costly, and the restoration is often bulky and heavy. If the stress-breaker is too weak or too movable, rapid absorption of the bone and consequent settling of the denture results. The prosthesis is not stabilized against lateral thrusts, and resilient types often pinch the tongue or other lingual tissues.

The second school of thought favors a few relatively mobile direct retainers, to be used for limited retention only. Functional displacement of the mucosa must be obtained either in the impression making by pressurized recording, or by means of a pressure rebase, which will record the functional form of the tissues as contrasted with the static anatomic form. The requirements for physiologically based cases are that the tissue side of the bases presents functional form. The artificial teeth make slightly premature contact, and the occlusal rests are just unseated until the mucosa is displaced to functional form. The direct retainers are freely movable, and there is a minimum of direct retainers for retention only.

The advantages are: simplicity of design and construction which results in light weight, small bulk and little servicing. The lightness of clasp contact is kind to abutment teeth: tissues are physiologically stimulated, which results in normal function and repair, which eliminates the necessity for rebasing.

The disadvantages are: the denture is not well stabilized, so that the soft tissues must resist the lateral thrusts. Overcompression of the tissue is often obtained when obtaining functional displacement which results in rapid resorption and the need for rebasing with many types of mucosa. Indirect retention is inefficient because of vertical denture movement, and the remaining teeth do not perform their share of the work with regard to stress support and stabilization.

The third school of thought recom-

*Steffel Victor L. Fundamental principles involved in partial denture design JADA—Page 534 (May)

mends multiple tooth engagement by clasps and extra rests, chiefly to prevent lateral movements. A distributed stress case required cast or rigid wrought direct retainers, with positive lug seats. An all rigid, non-flexible framework with multiple rests and direct retainers. Well adapted indirect retainers are added for stability aided by the broad coverage of the bases of the denture.

The advantages are: that functional stresses are limited and distributed, and overstimulation of tissue is prevented. The teeth are immobilized which allows for tissue regeneration, and no stress-supporting element is overstimulated or traumatized, which increases the life of the denture and eliminates rebasing. These cases are well stabilized against teeth to resist lateral thrusts, and these cases usually provide excellent indirect retention.

A disadvantage is that multiple contacts sometimes irritate the tongue, and in some cases are more conducive to caries.

Despite the fact that there are numerous superb materials and techniques for the fabrication of removable partial dentures, and as many different possible designs for a given case, nothing can supersede good judgment coupled with a knowledge of basic principles.

For some years many of us interested in the teaching of partial denture prosthesis to undergraduates have felt the need of a better understanding of the principles involved. We have long recognized the impossibility of giving students solutions for each possible problem that may arise. Consequently, we have been forced to stress basic principles and rules, which, if applied with judgment based upon clinical experience, could aid the student to solve most of the problems commonly encountered. For the most part it is a human failing to pass lightly over fundamentals which are usually abstract in nature and to stress details which are concrete. So does the dentist frequently

pass over the fundamentals which are necessary to the successful construction of partial dentures. I hope to present principles which we consider to be basic or fundamental in partial denture prosthesis. Principles are age-old and generally simple. Basic principles may be considered as a foundation of general facts upon which may be built a solution of a specific problem. The basic principles of partial denture prosthesis will of necessity be both mechanical and biological in nature. For purposes of discussion these concepts are grouped into five primary principles and under these five primary principles have been placed a series of secondary principles. The five major principles may be stated briefly as follows:

1. Dentist must have a working knowledge of both mechanical and biological factors involved.
2. Any plan of restoration must be based upon a complete examination and diagnosis of the individual case.
3. The dentist and not a technician should correlate the pertinent factors and recommend a proper plan of treatment.
4. A partial denture should restore form and function without injury.
5. A partial denture is a form of treatment, not a cure.

Let us now consider in detail these elementary principles.

PRINCIPLE ONE. In order that he may render adequate partial denture service, the dentist must of necessity have a knowledge of the various basic sciences involved, as anatomy, histology, pathology, physiology, and biochemistry. He must have a practical working knowledge of many of the simple laws of physics and engineering, particularly those which apply to levers and leverage. He must also have a knowledge of dental materials. The information received in his undergraduate years is but a foundation. New scientific advances from both biological and mechanical aspects are constantly being achieved and new materials

are always being developed. A better understanding of our problem in the light of increased knowledge and the use of improved materials makes prosthesis an ever-changing study. Here, in short, we have one of the primary differences between a profession and a trade.

The tradesman serves his time as an apprentice and spends the rest of his life performing that which he learned. The professional man in his college years receives a foundation and the privilege and opportunity to continue to learn. As the individual alone can never gain the experience that is possible by a constant interchange of experiences of large groups, study clubs and societies for this purpose were formed early in the life of our profession. More men should avail themselves of these opportunities, as too many dentists practise dentistry as though it were a trade.

If partial denture prosthesis is to be adequately practised, the dentists engaged in making such restorations must, of necessity not only have a knowledge of the biological and mechanical factors but also must continuously augment this knowledge. The partial denture is more than a piece of technique fabricated from various metallic and non-metallic substances. It is, or it should be, a type of treatment and as any other treatment, whether it is intended for the mouth of the patient or any other part of the human organism, should be planned in accordance with the conditions of the particular case.

PRINCIPLE TWO. A complete examination and diagnosis must be made before a partial denture can be designed. It is not sufficient merely to look into a patient's mouth and to see that there are missing teeth. To take an impression which is to be sent to the laboratory and receive in return a restoration which as a treatment for the condition, might well be compared to a bottle of patent medicine. An appliance which may render good service for one patient might be contraindicated for

another, even though at first glance the cases may seem to be similar.

An examination for prosthesis should and must be more comprehensive than is generally understood. It is essential that we know as much as possible about the mouth of the patient, and in most cases we should also know something of the general health background of the patient. It is required that we know something of the bone structure of the patient. It is essential that we know something of the eating as well as the hygienic habits of the patient. An examination with X-rays is a "must" for even the most simple partial denture restoration. Study models either mounted or unmounted are generally desirable.

An adequate examination is composed of both objective and subjective phases. The objective approach covering those things which we may see and feel and the subjective phase delving into those things which we must gain from memory or opinion of the patient.

Under the objective part of the examination we should take into consideration the following visual factors: (a) classification of case, (b) relation of the teeth to each other, (c) condition of mucosa, (d) size of tongue, (e) type and amount of saliva, (f) condition of the ridges, (g) ridge form, (h) arch form, (i) muscle attachments, (j) border tissue attachments, (k) denture space, (l) caries susceptibility, (m) abraded areas, (n) tooth form, (o) tooth shade, (p) care of the mouth, (q) occlusion.

The digital portion of the examination should yield information as follows: (a) mobility of the soft tissue (density), (b) muscle attachments, (c) border tissue, (d) muscle tone, (e) mobility of remaining teeth.

The X-rays are used in order that we may familiarize ourselves with the following factors: (a) length of the roots of the teeth, (b) inclination of roots, (c) osseous support available around the roots of the teeth, (d) pulpless teeth, (e) bone condition and type, (f) radiolucent

areas, (g) foreign bodies, (h) condition of cortical plate, (i) caries.

Study models aid in noting the following facts: (a) relation of the ridges to each other, (b) denture space, (c) retentive areas, (d) tooth inclination, rotation, elongation, (e) tooth form, (f) tooth arrangement, (g) occlusal relations.

The subjective part of the examination will cover three general phases, the patient's dental history, a review of general health, and the patient's reactions. Under patient's previous dental history, information should be obtained as to: (a) present complaints, (b) why teeth have been lost, (c) types of dental services experienced, (d) allergic reaction to anesthetics, (e) experience during and following previous extraction.

In consideration of the patient's general health the following factors should be ascertained: (a) childhood diseases, (b) adult diseases, (c) operations experienced, (d) present health condition, (e) exercise habits, (f) dietary habits.

The patient's reactions should be evaluated and details regarding the following information noted: (a) attitude toward previous dental service, (b) attitude toward loss of natural teeth, (c) expectation regarding denture service, (d) type of service within financial means of patient, (e) intelligence of patient.

Many dentists may feel that the time spent making such an examination would be largely waste time. Such belief is short-sighted and in poor economy. One case failure due to an improper plan of treatment based on an inadequate examination and diagnosis would waste more time than would be used in many hours of consultation and examination.

PRINCIPLE THREE. The third basic principle as stated, was that the dentist should plan the treatment of partial denture cases. I do not wish to belittle the place of the dental technician as a trained auxiliary health service worker. His training and the information which is provided him regarding a given case will enable the technician to fabricate raw materials

into a finished partial denture. In this phase of the work he frequently becomes more skilled than the dentist by way of constant technical practice. However, the fabrication of the appliance is but one phase of the problem. The planning of the treatment of a case requires much more than a knowledge of mechanical factors and technical ability.

The dentist has for his observation the pertinent facts regarding any given case as may be derived from an examination. It is frequently necessary to institute preparatory or corrective procedures prior to the construction of a restorative appliance. Contours of teeth may require modification, occlusal relations may require improvement, or surgical procedures may be necessary. The patient will accept such corrective procedures with much better grace if explained on the basis of an adequate examination and the diagnosis prior to the construction of an appliance. As the dentist alone may modify the conditions present in the mouth in order to influence the success of the case, he, not the technician, should plan the treatment.

PRINCIPLE FOUR. As a fourth basic principle it was stated that a partial denture is a treatment or part of a treatment and should not injure remaining teeth or adjacent structures. It is essential to plan or design the restoration in accordance with biological laws governing the reactions of the tissues involved. Sound principles of mechanics must also be followed in order that the appliance will serve its function without undue alteration or repair. The appliance itself must be carefully fabricated in order that it will go to place without modification either of itself or the adjacent structures. In order that the appliance will meet the above requirements a number of secondary principles must be observed.

The functions of a removable partial denture are: the restoration and preservation of occlusion impaired by loss of teeth; the restoration and preservation of occlusion impaired by malposition of re-

maining teeth; the preservation of the remaining teeth and alveolar ridges; and, the restoration of a normal or desirable facial expression impaired by loss of anterior teeth or closing of the bite.

A removable partial denture must be planned and constructed to fulfill these essential purposes with a minimum amount of interference to the tongue or vocal enunciation and the least possible display of structural materials.

The various parts of the base must be designed to provide an adequate mechanical counter-balance or resistance to the differently directed forces or movements without interfering with any of the functions of a partial denture.

Saddles are supporting elements, one of their functions being to resist masticatory pressure against the alveolar ridges. These flanges, resting against the lingual, buccal, or labial sides of alveolar ridges, may provide bracing support against horizontal, lateral, or antro-posterior displacements.

The casts used in the fabrication of partial dentures must be derived from impressions which faithfully recorded the oral structures involved.

The stress of mastication must be resisted by an adequate support. Where possible, tooth-borne support should be employed. Where tooth-borne support cannot be utilized in whole or in part, the size of the saddle must be increased in proportion to the stress exerted upon it. Where the size of the saddle cannot be increased sufficiently, the occlusal stress must be reduced in order that a satisfactory relation between pressure exerted and ability to resist such pressure is attained.

Clasps are direct retainers whose function is to prevent the vertical displacement of the denture from its seat. Clasps may also serve as bracing supports to prevent the horizontal shifting of the denture or drifting or rotation of the teeth engaged by them.

Direct retention is only provided by clasps, for the ends of the saddles to which they are attached. When no anchor

teeth are available at the other ends, some means must be found to hold them in their seats against the ridges. This can be accomplished by extensions of the base to rest against the surfaces of teeth on the opposite side of an axial line between the clasps. Such parts of a denture are known as indirect retainers.

Partial dentures which in whole or in part depend upon mucosa for support must not transmit this stress other than in a rootwise vertical direction to the abutment teeth. That is to say, when the denture is displaced due to compression forces occasioned by the stress of mastication, torquing strain must not be transmitted into the abutment teeth. These strains and stresses must either be minimized or eliminated by proper design of the retainer or some sort of stress-breaking action must be provided.

Indirect retention as well as direct retention should be provided in all distal extension types of cases in order to stabilize the appliance.

Major connectors, such as palatal, lingual, or labial bars, serve the purpose of joining posterior saddles with each other, or in unilateral cases to connect the posterior saddle with an anchorage on the side of the arch opposite the saddle. Among these connecting elements must be included all the smaller bars and struts which are employed to join nearby saddles or to support or reinforce clasps or indirect retainers.

Lingual and palatal bars should be so located that they will neither interfere with the comfort nor the speech of the patient. Experience has shown us that the palatal bar should be located approximately the same position as the distal border of a complete denture crossing the palate distal to the second molars.

Any stress placed upon the abutment teeth by a retainer must be reciprocated. That is to say, wherever a clasp arm is adjusted, care must be taken that an equal and opposite force is exerted or our prosthetic treatment becomes an orthodontic treatment.

Independent lateral action of saddles should be prevented. The use of a very light lingual or palatal bar allows an independent action of saddles rotating about the ridge crest as a centre. The stress of mastication in causing this rotation places considerable pressure on the buccal and lingual peripheries of the saddle. Soreness in these areas may result and the dentist frequently is forced to trim away the saddle, thus reducing the much needed support. Clinical experience has taught us that bars joining saddles and lingual bars in particular must be of sufficient strength to prevent torsion of saddles.

Tooth rests, sometimes called "stops" or "rest lugs," are intended to resist the movement of a denture by vertical masticatory pressure. In addition to vertical support of the denture in its functional position, they also serve the following purposes: They are an important aid to the retentive capacity of clasps, by helping to keep the clasp terminals in their proper positions; they prevent impingement of the cervical edges of clasps against the gingival margins of anchor teeth, and prevent the impingement of the extremities of saddles against tissues adjacent to the gingival margins.

Each tooth adjacent to an edentulous area should carry a tooth rest, whether it is clasped or not. As direct retainers, clasps secure against vertical displacement those parts of dentures to which they are directly attached, and depend for their effectiveness upon two principal factors: 1, the contours of the crowns of the anchor teeth, or the angles at which they lean toward or away from each other; 2, the physical properties of the clasp metal. In order to provide retention, one or both of the terminals or arms of a clasp must be elastic enough to spread open and pass the opposing projections created by the contours of the anchor teeth, and then close about the undercut. The extent of this spreading, of course, is greatest at the free ends or terminals, gradually diminishing to nothing where

the clasp is joined to the base of the denture. To locate these undercuts and determine the most favorable areas for retention, the master cast should be surveyed. Clasp guide lines should be charted with a surveying instrument. The guide line defines the limits of projection on the contour of the proposed anchor teeth and indicates the position of retention undercuts.

The position of the guide line and therefore of the clasps can be changed by varying the angle at which the cast is tilted. The angle of the cast determines the path of insertion of the denture to make it easy to seat and remove from the mouth, in one direction only—a direction parallel to the vertical mandrel of the surveyor.

PRINCIPLE FIVE. As a fifth basic principle it was stated that a partial denture may be considered a form of treatment but never a cure, for like a treatment it must be modified from time to time in order to suit changing conditions whereas a cure would be considered a permanent correction of the condition. The partial denture itself is subject to wear, and tear, and breakage. The oral tissues of the patient never remain the same but are constantly changing, hence the partial denture patient is one who must by all means be subject to periodic recall in order to prevent or rectify harmful changes which may take place. In the construction of a partial denture, simplicity should be a by-word. The more simple the appliance the less likelihood there will be of frequent adjustments and repair. The appliance should be so designed and constructed that it may be modified to compensate for changes in the thickness of mucosa or alveolar resorption.

CONCLUSION:

As has been stated it is impossible to present solutions for all the varied problems that may arise relative to the planning of removable partial dentures, yet with basic principles and common

judgment based on clinical experience it is possible for the dentist to pass suggestions and to recommend a proper plan of design for the particular appliance.

The planning and designing of the removable partial denture is a procedure and responsibility of the dentist, and should not be delegated to any other group. The dentist engaged in making such restorations must have a knowledge of the biological and mechanical factors involved, and he must continuously augment this knowledge.

Removable partial denture prosthesis is a type of treatment, and should be

planned in accordance with the conditions of the particular case and requires much more than a knowledge of mechanical factors and technical ability.

I want to thank Dr. George Hughes of Oakland, California, for his assistance and courtesy and permission to use his fundamental principles in this paper.

The opinions or conclusions contained in this presentation, are those of the author, and are not to be construed as official or reflecting the views of the United States Air Force or the Air Force at large.

The rational use of antibiotics

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The purpose of this paper is to give a brief review of the use of antibiotics with particular reference where possible to points of dental interest. It is felt that the general principles of antibiotics apply throughout whether they be in the field of medicine or dentistry.

One might well start with a definition of terms. An antibiotic is a substance produced from microbes with antimicrobial activity as opposed to the chemotherapeutic substance (e.g. Sulfa drugs which are synthetic chemical substances).

The period from 1939 until the present might well be termed the antibiotic era. It is remarkable how in the past ten years the whole treatment of infectious diseases

and infections has so radically changed. It has been said that antibiotics are the first marked advance in therapeutics since Ehrlich's discovery of Salvarsan.

A brief historical review may be of interest. Tyrothricin was the first antibiotic to be discovered in 1939 by Dubos. Except for topical use, Tyrothricin is now only of historical interest because of its toxic property of causing hemolysis of the red blood cells. The discovery of Penicillin in 1929 by Dr. Fleming was overshadowed subsequently by the Sulfa drugs. At the outbreak of World War Two in September 1939, Penicillin still remained a laboratory curiosity. In 1941 the first trials were made with Penicillin by Drs. Chain and Florey. In 1943 there was enough Penicillin for the Armed Forces. In 1953 the rate of production of Penicillin in the United States alone was approximately twenty-five tons per month.

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Streptomycin was discovered in 1944 by Waksman of New Jersey. This was the first antibiotic to exhibit specificity for gram negative organisms.

In 1945 Bacitracin was isolated by Johnson from the organism *B. Subtilis*. These antibiotics were followed by the isolation of Chloromycetin in 1949, Aureomycin in 1948, Terramycin in 1950 and Erythromycin in 1952. These eight antibiotics are now in common use. However, in the field of research and experimentation, numerous others are in the process of being evolved. To name a few Neomycin, Mycomycin, Viomycin, Magnamycin, Puromycin, Hyromycin, Methymycin, etc.

MODE OF ACTION

As near as one can gather from the literature, enzyme systems are necessary for the growth of multiplication of bacteria. If these enzyme systems be removed or blocked, bacteria cease to grow or multiply. It is by the removal or blocking of these enzyme systems that antibiotics carry out their action, e.g. Penicillin blocks the enzymatic action of glutamic acid which is essential for the life of the various bacteria against which it is effective. Similarly, Aureomycin blocks the enzymatic action of adenosine-tri-phosphate.

BACTERIOLOGICAL SPECTRA

The first principle necessary for the application of antibiotics is the knowledge of the bacteria against which the individual antibiotics are effective. This information is tabulated for ready reference form in Table 1. A few comments regarding this table may be of interest.

1. Penicillin and Bacitracin have very similar spectra and, when used together, are strongly Synergistic.

2. Chloromycetin still remains the drug of choice in the treatment of Typhoid Fever.

3. Polymyxin is included in this group because it is still as yet the most effective antibiotic for the treatment of *Pseudomonas aeruginosa* (*B. Pyocyaneus*).

4. Terramycin has given good results in the treatment of amoebiasis.

5. Erythromycin is proving most helpful in the treatment of Staphylococcal infections which have become resistant to Penicillin.

DOSAGE AND ADMINISTRATION

In Table 2 will be found a summary of the methods of administration and the usual dosage schedules in every day use. It is to be noted in Table 2 that the only antibiotics which may be given intravenously are Penicillin, Aureomycin, Terramycin Erythromycin. The intravenous route is only used when some adverse circumstances preclude the usual methods of administration, e.g. vomiting in the presence of duodenal ulcer would require the intravenous use of Aureomycin if it were specifically indicated for some other reason. Intravenous administration of antibiotics is not without danger and is frequently complicated by Phlebitis. Intrathecally, Penicillin, Streptomycin and Polymyxin are the only drugs administered with safety and then only in limited doses (see Table 2).

All of the eight antibiotics included in this discussion may be given by the oral route. Penicillin, Streptomycin, Polymyxin and Bacitracin may be given intramuscularly. With regard to Troches and Powders, particularly with reference to Penicillin, generally they are not recommended. In this form Penicillin has much greater sensitizing properties than otherwise. One series of paradoxical cases from the literature at this point bears mentioning. Two hundred children of school age were given Penicillin tooth paste to use for two years; a control series of another two hundred children was done simultaneously. It was noted at the end of the two year period that the children using Penicillin paste were much more free from dental caries than the control group and the incidence of allergenicity was surprisingly low. Combinations of Tyrothrycin-Bacitracin are now on the market and are to be recommended in

BACTERIOLOGICAL SPECTRA

	<i>Gram Positive</i> Actinomycosis Anthrax Clostridia Diphtheria	<i>Gram Negative</i> Gonococcus Meningococcus	<i>Virus</i>	<i>Spirochetis</i> Leptosira T. Pallidum	<i>Rickettsia</i>
PENICILLIN	Pneumococcus Staphylococcus Streptococcus				
STREPTOMYCIN	Tubercle Bacillus	Aerobacter Brucella E. coli Gr. Inguinale H. Influenzae Salmonella			
CHLORO-MYCETIN	Anthrax Diphtheria Staphylococcus Streptococcus	Aerobacter Brucella E. coli E. Typhosis Gonococcus H. Influenzae Shigella	Lymphogranuloma Venereum Psittacosis Virus Pneumonia		Rocky Mountain Spotted Fever Scrub Typhus Typhus
AUREOMYCIN (Chlortetracycline)	Anthrax Pneumococcus Staphylococcus Streptococcus	Aerobacter Brucella Cholera E. coli Gonococcus Gr. Inguinale	Lymphogranuloma Venereum Mumps (orchitis) Psittacosis Virus Pneumonia		Q. Fever Rocky Mountain Spotted Fever Scrub Typhus Typhus
TERRAMYCIN (Oxytetracycline)	Anthrax Clostridia Pneumococcus Staphylococcus Streptococcus	Aerobacter Brucella E. coli Gr. Inguinale H. Influenzae	Lymphogranuloma Venereum Psittacosis Stevens-Johnson Virus Pneumonia	T. Pallidum Vincentis Yaws	Q. Fever Rickettsialpox Rocky Mountain Spotted Fever Scrub Typhus Typhus
ERYTHRO-MYCIN	Clostridia Diphtheria Pneumococcus	Brucella H. Pertussis Meningococcus	Psittacosis	Spirochoeta Novyi	Scrub Typhus Typhus
POLYMYXIN		Aerobacter E. coli H. Influenzae Klebsiella Pasteurella			
BACITRACIN	Actinomycosis Clostridia Pneumococcus	Gonococcus H. Influenzae Shigella		T. Pallidum	

DOSAGE AND ADMINISTRATION

Table 2

	<i>Oral</i> —require three to five times the intramuscular dose for equivalent effect	<i>Intramuscular</i> —300,000 to 600,000 units daily —Aqueous—every 3 hours —Repository—daily —DBED—every 2-4 weeks	<i>Intravenous</i> —600,000 and up—continuous	<i>Intrathecal</i> —10,000 to 30,000 units daily
Penicillin	—3 to .5 grams daily	—1 to 2 grams daily	—not recommended	—50 to 75 mgms. daily
Streptomycin	—50 and 250 mgm. capsules —1 to 4 grams daily in divided doses every 4 or 6 hours	—local tissue reaction precludes — <i>Rectal</i> —cleansing enema —puncture capsule and insert —use 25% greater dose	—2 grams dissolved in propylene glycol —give every 4 hours —not without risk	—not used
Aureomycin (Chlorotetracycline)	—250 mgm. capsules —1 to 4 grams daily in divided doses every four or six hours	—not used	—100 and 500 mgm. vials —given with distilled water, saline or glucose	—not used
Terramycin (Oxytetracycline)	—250 mgm. capsules —1 to 4 grams daily in divided doses every 4 or 6 hours	—not used	—250 mgms. in 10 cc. vials —500 mgms. in 20 cc. vials —.5 to 2 G daily in divided doses every 12 hours in glucose, water or saline (at least 100 cc.)	—not used
Erythromycin	—100 and 200 mgm. tablets —1/2 to 4 grams daily in divided doses every 4 or 6 hours	—not used (very irritating)	—250 mgms. dissolved in buffer solution and given every 6 hours	—not used
Polymyxin	—50 mgm. tablets —50 mgms. every 6 or 8 hours —not to exceed 200 mgms. daily	—2.5 mgms. per kilogram —not to exceed 200 mgms. daily —e.g. 50 mgms. every 6 or 8 hours	—not used	—5 mgms. daily first three days then every second day
Bacitracin	—5000 unit tablets —not to exceed 80,000 units daily in divided doses every 6 hours	—50,000 to 100,000 units daily in divided doses —e.g. 20,000 units every 6 hours in 1 cc. of 1% procaine	—not used	—not used

troche form because of their wide spectrum and low allergenicity.

Since Penicillin is the most widely used drug in this group, a more detailed description of its administration would be in order. Penicillin has been separated into its various purified forms, e.g. F, G, K, X, O. At present Penicillin G comprises about 90% of the marketed Penicillin. Penicillin O has only 1/10 the allergenic properties of Penicillin G and is most useful in cases which have been found to be sensitive to Penicillin G. However, Penicillin O at the moment, is difficult to manufacture and is expensive. When these difficulties have been overcome, Penicillin O will probably replace Penicillin G.

The intravenous administration of Penicillin is now being used much less frequently and is reserved for severe or grave emergency cases. It has been found that comparable results may be obtained for instance in the treatment of Subacute Bacterial Endocarditis by the administration of Penicillin intramuscularly. At present with so many different forms of Penicillin now available one should state not only the dosage of Penicillin given but also the type of Penicillin used. Aqueous Penicillin given intramuscularly, gives rapid therapeutic blood levels within one-half hour and maintains them for at least twenty-four hours. The repository Penicillins which are composed of the Procaine Salt require one to two hours to achieve an effective blood level which is then maintained for as long as 48-72 hours. Combination of a Potassium or Sodium Salt of Penicillin with the Procaine Salt achieve both of the above effects. Di-benzyl-ethylene diamine Penicillin (DBED) achieves blood levels within a few hours and, by virtue of the size of its crystals, is slowly and evenly absorbed and will give effective therapeutic blood levels for as long as two weeks following one injection.

If the presence of a mixed infection is suspected and organisms are found

which are not highly sensitive to Penicillin, the combination of Penicillin and Streptomycin, which are strongly Synergistic, may be indicated.

Considerable controversy has arisen over the efficacy of oral Penicillin and it is well known that gastric acidity destroys the action of Penicillin. It is interesting to note that in cases of Pernicious Anemia with the administration of oral Penicillin higher blood levels were more readily obtained because of the low gastric acidity than in cases of duodenal ulcer in which the gastric acidity was high. These difficulties have now been overcome by the preparation of buffered and enteric coated Penicillin tablets. It is generally felt that in mild acute infections, oral Penicillin may be as effective as the intramuscular route. In using oral Penicillin three to five times the intramuscular dose is necessary to obtain equivalent blood levels. The usual dosage given every eight hours on an empty stomach approximates 3-500,000 units. DBED Penicillin is also being used in the oral form and it has been suggested that the absorption is more uniform and more prolonged with this form.

Benemid has further enhanced the oral use of Penicillin by its blocking effect on the renal tubules of the excretion of Penicillin and thus making therapeutic blood levels easier to maintain.

Brief mention may be made of some of the dental indications for the use of Penicillin.

PROPHYLAXIS

In cases suspected of having Rheumatic Heart Disease or congenital heart deformities, Penicillin should be used prophylactically two days before, the day of, and two days after, any dental surgery, including extraction, to circumvent the possible development of Subacute Bacterial Endocarditis. Similarly in Diabetics, anemic patients and patients who are debilitated, prophylaxis should also be used.

ACTIVE

The active indications are well known (e.g., Osteomyelitis, Cellulitis, Sinusitis, Abscess and Post Rheumatic infection.)

CONCENTRATIONS IN THE BODY FLUIDS

Further knowledge necessary for the rational use of antibiotics is their concentration in various body cavities and fluids. This information is tabulated in Table 3 with reference to the eight antibiotics discussed in this paper. An example of the value of this knowledge is as follows:—Penicillin and Streptomycin do not diffuse readily into the Peritoneal cavity and, therefore, give variable results in cases of Peritonitis. On the other hand, Terramycin, whose spectrum is more inclusive of those organisms usually found in the bowel, penetrates the peritoneal cavity readily and gives as high as 75% cures. It might be of interest to speculate on the concentrations of the various antibiotics in the saliva and their ability to penetrate the periodontal membrane when administered systematically.

TOXICITY

Antibiotics are powerful agents and their use is not without risk. Brief mention will be made of some of the toxic manifestations. The toxicity of Streptomycin for the eighth cranial nerve when administered over long periods of time is well known. When combinations of Streptomycin and Dihydrostreptomycin are used, toxic effects are more than cut in half.

After Chloromycetin therapy, several cases of Aplastic anemia with fatal outcome are now on record. However, the drug should still be used when specifically indicated (e.g., Typhoid Fever).

The use of Aureomycin and Terramycin after a period of five days is not infrequently complicated by severe diarrhea. This is due to the destruction of certain bacteria with resulting imbalance in the bacterial flora of the bowel. Polymyxin and Bacitracin have both nephrotoxic and neurotoxic effects and should not be used

systematically outside of hospital. Erythromycin, fortunately, has a very low toxicity but, if given in large doses, may cause nausea. The reactions of Penicillin will be considered in slightly more detail.

Caution should be taken in using Penicillin with patients who have a family or personal history of Asthma, Hay Fever, Hives, Eczema or other allergic manifestations. If Penicillin has been given previously, particularly within the past three months, the liability of reactions is more likely. As mentioned previously, topical application is not recommended. Reactions, when they do occur, may be classed as immediate acute, or delayed subacute. In the first group anaphylactic shock may occur within fifteen minutes of administration. The treatment requires the administration of four to five minims of a 1 in 1,000 solution of adrenalin, subcutaneously or intravenously. This dosage may be repeated every fifteen to thirty minutes for three or four doses. The delayed reactions may take the form of angioneurotic oedema, giant urticaria, or general skin rashes of almost any type. The immediate treatment again is the administration of four or five minims of 1 in 1,000 adrenalin subcutaneously followed by an antihistamine drug (e.g., pyrabenzamine 50 mgms. every four to six hours). Cortisone, in severe cases, has given some remarkable results.

RESISTANCE

With the first recognition of the ability of bacteria to develop resistance to antibiotics, it was most startling to think that eventually the whole world of bacteria would in due course become resistant to all the recognized antibiotics. This has not proved to be the case. It is now realized that resistance is mostly confined to Staphylococcal and urinary infections and to the use of Streptomycin. In this regard it is worthy of note that in considering Aureomycin and Terramycin, resistance if found in one is almost invariably present in the other because of their chemical similarity.

CONCENTRATIONS IN VARIOUS BODY FLUIDS

Table 3

	<i>Gastrointestinal (oral)</i>	<i>Urine</i>	<i>Cerebrospinal Fluid</i>	<i>Pleural Cavity</i>	<i>Peritoneal Cavity</i>	<i>Bile</i>
Penicillin	partially destroyed by gastric juices; otherwise absorbed	good concentration in six hours	poor concentration unless acutely in- flamed meninges and very large doses	some diffusion into	readily into ascitic fluid	some diffusion into
Streptomycin	poorly absorbed— large amounts recovered in feces	appears early in high concentrations	none after intra- muscular injection unless acutely in- flamed meninges	moderate concentra- tion	moderate concentra- tion	good concentration
Chloromycetin	rapidly absorbed	*good concentration —maximum in 4-6 hours	some concentration but much lower and slower than serum levels			Same as blood levels
Aureomycin (Chlortetracycline)	rapidly absorbed	good concentration within one hour	about one half the concentration in the serum	slight concentration	slight concentration	about one quarter of blood con- centration
Terramycin (Oxytetracycline)	rapidly absorbed— some in feces and alters flora	good concentration within one hour	poor concentration	good concentration— readily passes the pleural membrane	good concentration— readily passes peritoneal membrane	good concentration
Erythromycin	rapidly absorbed— alters gram positive flora but not gram negative flora	good concentration— parallels the serum levels	poor concentration	concentration about one eighth the serum level	good concentration— about one half the serum level	good concentration
Polymyxin	not absorbed—high concentration in feces	fair concentration— sufficient for bacteriacidal effect	poor concentration			
Bacitracin	poorly absorbed— high concentration in feces	fair concentration— thirty percent excreted via urine	poor concentration	good concentration— readily passes the pleural membrane	good concentrations in ascitic fluid— poor concentrations in peritoneal fluid	good concentration

*great bulk excreted in inactive form and only 10% excreted unchanged.

SYNERGISM, ANTAGONISM AND COMBINED THERAPY

Brief mention may be made of the use of antibiotics in combination. Antibiotics in their effect on bacteria are divided into two main groups.

Group 1 kill the infective organisms and are said to be Bactericidal. This group includes Penicillin, Streptomycin, Bacitracin, Erythromycin and Polymyxin.

Group 2 prevent the multiplication of the infective organisms and are said to be Bacteriostatic. This group includes Aureomycin, Terramycin and Chloromycetin. On this basis the following general statements may be made.

Two antibiotics from Group 1, when used in combination, are usually Synergistic.

Two antibiotics from Group 2, when used in combination, usually have only an additive effect.

The combination of one antibiotic from Group 1 and one antibiotic from Group 2 is frequently Antagonistic.

Experimentally, these statements have been shown to be far from infallible and every case should be considered individually.

CONCLUSIONS

It is recognized that the field of antibiotics is a large one and expanding rapidly; it is impossible to cover it even briefly in a paper such as this. We have tried to stress the fact that the use of antibiotics should be a rational one and "shot-gun therapy" should be deprecated. The scientific approach includes the following steps.

1. Isolation of the organism.
2. Sensitivity tests for the selection of the appropriate antibiotics.

3. Consideration for concentration of the antibiotic to be used, in the appropriate body fluids and cavities.
4. Proper dose and route of administration.
5. Complete awareness of the toxicity involved and the ability to cope with any complication which might arise.

BIBLIOGRAPHY

1. Jawetz, E.; and Gunnison, J. B.
"An Experimental Basis of Combined Antibiotic Action" *Journal of the American Medical Association* Volume 150, No. 7; Pg. 693; Oct. 18/52.
2. Smith, J. W.; Dyke, R. W.; and Griffith, R. S.
"Absorption Following Oral Administration of Erythromycin" *Journal of the American Medical Association* Volume 151, No. 10; Pg. 805; March 7/53.
3. Dowling, H. F.; Lepper, M. H.; and Jackson, G. G.
"When Should Antibiotics Be Used In Combination" *Journal of the American Medical Association* Volume 151, No. 10; Pg. 813; March 7/53.
4. Alexander, Jr., J. D.; Eisenberg, G. M.; Flippin, H. F.
"Combined Antibiotic Therapy In Refractory Urinary Tract Infections" *Journal of the American Medical Association* Volume 152, No. 14; Pg. 1302; Aug. 1/53.
5. Boger, W. P.; Mattucci, W. V.; Schimmel, N. H.; Flippin, H. F.; (Philadelphia General Hospital) "Beneficial—Its Influence on P A S, Penicillin and other Antibiotics". Scientific Exhibit presented at Atlantic City Session of the American Medical Association June 11-15, 1951.
6. Boger, W. P.;
"The Present Status of Antibiotic Therapy". *Industrial Medicine and Surgery* Volume 22:7; Pg. 288; July 53.
7. Martin, W. J.; Nichols, D. R.; Geraci, J. E.;
"The Present Status of Erythromycin". *Proceedings of The Staff Meetings of the Mayo Clinic* Volume 28; Pg. 609; November 53.
8. Garrod, L. P.
"Combined Chemotherapy In Bacterial Infections" *British Medical Journal* Volume 1; Pg. 953; May 3/53.
9. Jawetz, E.; Gunnison, J. B.;
"Antibiotic Synergism And Antagonism: An Assessment of The Problem". *Pharmacological Reviews* Vol. 5; No. 2; June 53.
10. Welch, H.; Lewis, C. N.;
"Antibiotic Therapy". The Arundel Press, Inc., Washington, D. C.
11. Johnson, J. H.
"The Use of Antibiotics In Dental Oral Surgery". *Dental Oral Surgery Course*, Toronto University, April-May, 1953.

Dentists should take advantage of the leverages which nature affords to counteract the leverages which man must impose through dental prostheses. Fixation of abutments should be employed to take maximum advantage of the foundational capacity of weakened investing tissues. Fixation provides the mechanical advantage of leverage and simultaneously restricts the excessive tooth movements which exacerbate local infectious processes. The reason smaller abutments may be used with split joint cantilever bridgework is that the foundational structures give. When the foundational structures pick up rigidity or stiffness, the abutments are wracked more, and the cement gives way because it is the weakest link in the system. But this proves the premise. To offset the problem of structural failure, cut substantial abutments.

Edwin S. Smyd, D.D.S., *The Journal of Prosthetic Dentistry*.

Unusual impactions

by WILLIAM W. BRESLIN, D.D.S., Toronto

IMPACTED LEFT AND RIGHT LOWER THIRD BICUSPIDS

Earl S. age 14 was referred by an orthodontist for the removal of imbedded teeth in the bicuspid area.

CLINICAL EXAMINATION

There was a full complement of twenty eight teeth in excellent condition. The first and second bicuspid and the first and second molars were in normal relationship in the arch. There were no prominences on the lingual or the buccal to indicate possible unerupted teeth.

RADIOGRAPHIC EXAMINATION:

Occlusal radiographs failed to reveal any imbedded teeth about the bicuspid. (Figure one) Lateral intra-oral films indicated the bicuspid and molars to be in

normal relationship on both sides of the arch. About 8 mm. below the alveolar crest, between the mesial root of the first molar and the distal of the second bicuspid, an unerupted crown with a bicuspid contour was present on left and right sides.

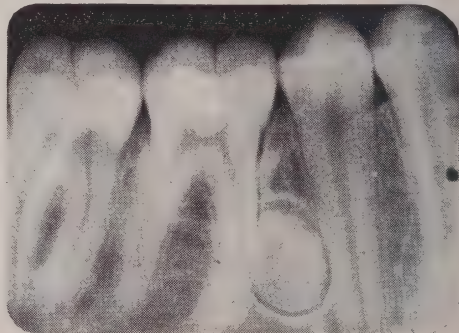


FIGURE 2

Left Side Preoperative



FIGURE 3

Right Side Preoperative.



FIGURE 1

Occlusal View Preoperative—Aug. 20/51

TREATMENT: (OFFICE)

On August 31, 1951, a mandibular block injection was made with 2 cc. monacaine hydrochloride, on the right side. With a periosteal cleaver the lingual mucosa was displaced apically from the first bicuspid to the distal of the first molar.

The internal surface of the mandible opposite this region was exposed to the apical ends of the teeth. A sharp pointed hand chisel was directed over the impacted crown. The lingual bone was removed and the crown exposed. An attempt was made to remove the crown with a straight elevator, but it proved unsuccessful due to the rotary movement in the bone.

A similar exposure of the area was made on the buccal surface, and access gained to the crown. When it was firmly wedged in the space with absorbent cotton, the crown was sectioned with a straight automatic chisel, and removed buccally. The area was curetted to the lingual. The buccal and lingual mucosae were replaced and sutured with black braided silk. Patient was comfortable and able to attend the football game the next day.

On September 14, 1951 patient was nervous about the removal of the impaction on the left side. Premedication of 1½ grs. tuinal was given thirty minutes before operation. Similar procedure was followed as on the right side, except that the first access was obtained from the buccal. On September 19, 1951, patient's temperature had risen to 100.6 with noticeable swelling, at which time 300,000 units of procaine penicillin were administered. By September 21, 1951 the condition was normal, and the sutures were removed.

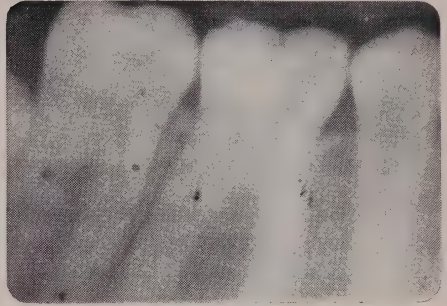


FIGURE 4

Left Late Postoperative Nov. 21/52.

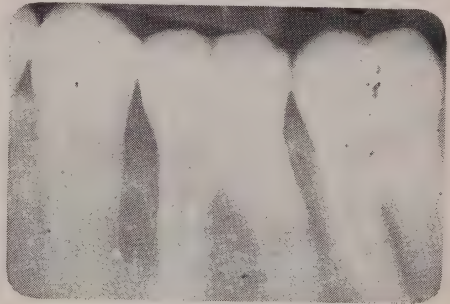


FIGURE 5

Right Late Postoperative Nov. 21/52.

CONCLUSION:

Orthodontic treatment was continued after September 21, 1951. Radiographs taken fourteen months later indicated regeneration of bone on both sides, without any change to the adjacent teeth.

Methods and techniques for adopting the procedures of germfree rearing of animals to the study of experimental dental caries have been described in a complete report on the initial phase of the study.

Findings indicate that twenty-two rats (*Rattus norvegicus albinus*) reared under germfree conditions remained entirely free of even microscopically demonstrable dental caries. Of thirty-nine conventional control rats, possessing the usual mixed microbial populations, thirty-eight developed carious lesions when maintained on the same kind of dietary regime as the germfree animals.

It is deduced from this evidence that dental caries in the rat is not possible in the absence of microorganisms.

Journal of Dental Research, April 1954.

Elyria, Ohio.—The power of suggestion is singularly strong sometimes. Fluorides were to be added to the city water supply last Thursday. Due to a delay in testing, however, the fluorides did not actually go into the water until the following Wednesday. In the interim the water department was flooded with people complaining about the taste.

"Niagara Falls Evening Review", Apr. 30/54.

ABSTRACTS

Gingival Condition in Pregnant Women

by MOHAMED S. GRINDLY, F.D.S., R.C.S.(Eng.),
Alexandria, Egypt.

Oral Surgery, Oral Medicine and Oral Pathology, June, 1954

Hormonal upsets of ovarian origin occur during the menstrual period, at puberty, and during pregnancy. During pregnancy, the hormonal upset lasts for a considerable number of months; hence the preponderance of a type of gingivitis known as "gingivitis gravidarum," and the appearance of definite tumors on the gingivae of some pregnant women. These tumors are called "pregnancy tumors of the gingivae."

There are five classes of gingival upsets due to the influence of the sex-related hormones:

1. The bleeding gingivae, with more or less nor other manifestation.
2. The mildly puffed gingivae.
3. The raspberry red gingivae.
4. The hypertrophic gingivitis of pregnancy.
5. The pregnancy tumor.

Only the last two classes are considered to be due to pregnancy. The first three classes are not of so specific a nature as to render them a problem in diagnosis.

On biopsy, both hypertrophic gingivitis of pregnancy and pregnancy tumors of the gingivae present the same picture. The difference lies in the localization or diffusibility of the lesion. Each starts as a hyperplastic change in the epithelium, edema, and a much vascularized corium. The blood vessels in the corium may be so numerous that a diagnosis of heman-

giomatous epulis or even a hemangioma may be made by the histopathologist.

The site of the tumors may be predetermined by some previous irritation or infection involving the interdental papilla. Mouth breathing or enthusiastic tooth brushing of the front region of the mouth accounts for the preponderance of the lesions in the anterior part of the mouth.

The mouths of 1002 pregnant women were examined and the gingivae were classified under four categories:

1. Normal gingivae.
2. Common gingivitis without any hyperplastic signs.
3. Hyperplastic gingivitis (gingivitis gravidarum).
4. Gingival pregnancy tumor.

The third and fourth conditions are those which were considered as definitely due to pregnancy. Pregnancy could not be blamed for causing gingivitis without hyperplasia, although it might be an early stage of gingivitis gravidarum or pregnancy tumor.

Biopsy specimens were taken from Groups 3 and 4. Three points were looked for in each slide, and were considered as musts for correct diagnosis:

1. An increase in the number of the prickle cells.
2. The presence of hydropic spaces in and between the prickle cells.
3. A corium rich in blood vessels.

The following table shows the results of this examination:

Group	Number of Cases	Per cent
1. Normal	141	14
2. Common Gingivitis	602	60
3. Gingivitis Gravidarum	232	23
4. Pregnancy tumor	27	2.7

Requirements of an Acceptable Impression

by RALPH CARSON APPLEBY, D.D.S., MS..

The Journal of Prosthetic Dentistry. May 1954.

A finished impression should always be analyzed to see if the four fundamental requirements of an acceptable impression have been met.

1. *Area Coverage.* — All the denture-bearing area possible within the limits of tissue tolerance has been covered, not the residual ridge alone, but the most important areas of the buccal shelf and retromolar pad as well.

2. *Periphery.* — A compound peripheral border has been meticulously established, section by section, within the limits of tissue tolerance.

3. *Valve Seal Without Interference With Functional Movements.* — By establishing a periphery which harmonizes with the anatomic and physiologic landmarks surrounding the denture, provision has been made not only for valve seal, but also for maximum lateral stability.

4. *Accurate Adaptation to the Tissues Without Injurious Displacement.* — A carefully muscle-trimmed periphery insures contact with, but nonimpingement on the border tissues. A final wash material, as soft as, or softer than, the tissues being registered, provides for accurate adaptation without injurious displacement and for equitable distribution of stress. This, plus the fact that a cast metal base is used, further insures that the soft tissues will be more accurately reproduced in the finished denture, with better tissue and denture base adaptation resulting.

Oral Tissue Reactions from Dilantin Medication in the Control of Epileptic Seizures.

by CLIFTON O. DUMMETT, D.D.S., M.S.D.

The Journal of Periodontology. April 1954.

Epilepsy is an abnormal condition in which recurring convulsive seizures result from various influences upon the central nervous system. The symptomatic epilepsies are produced by discoverable disease processes while the aetiology of the idiopathic epilepsies has not as yet been discovered.

Of special interest to the dentist is the fact that in these seizures, the spasm may be so violent as to produce a dislocation of the temporomandibular joint. Frequently a tooth may be broken or dislodged, and the patient may even fracture his jaw during the furious convulsive movements. Biting of the tongue and cheek, smacking, salivation, forcible chewing and swallowing are other symptoms

of these "masticatory seizures" as they are frequently called. The persons affected are unconscious of what is happening, and may be totally unaware of the fact that the incident did truly occur. The spontaneous attacks may be initiated with a swallowing motion, followed by closure, traction of the mouth to the right or left and twitching of the lips. The duration of the seizure may be no more than twenty seconds. These masticatory seizures have their localization in the vicinity of one or other of the fissures of Sylvius. Chewing, smacking and salivation are due to activity of the lowest portion of the Rolandic cortex.

Some fifteen years ago, Sodium Diphenyl Hydantoinate was found to be efficacious in lessening the frequency of convulsive attacks in grand mal epilepsy. The most spectacular tissue reaction associated with the use of this anticonvulsant was a hyperplasia of the gingivae. Beginning as a painless generalized enlargement of the inter-dental papillae, the lesion later involved the remainder of the

gingivae. An initial stippled granular appearance was followed by warty, lobulated growth with cleft formations. If uncontrolled the growth continues until it covers the labial, buccal and lingual surfaces of the teeth, eventually encroaching on the occlusal and incisal surfaces. In many cases mastication becomes a difficult and painful procedure, if not an impossible process.

In the Veterans' Hospital in Tuskegee, Alabama, a total of 123 epileptics was examined, 47 of whom showed varying degrees of gingival tissue transformations. The results of this survey do not tend to support frequent unsubstantiated claims relative to racial determinants of incidence. It would appear that like age, sex, weight and height of the patient, race does not influence the incidence of gingival reactions.

Oral sepsis, various forms of mechanical irritation, malalignment and non-occlusion do have some aggravating effect on hyperplasia when the latter occurs as a result of the administration of dilantin sodium. Whether or not various forms of periodontal disease or other local etio-

logical factors of periodontal disease have similar effects, is still controversial.

The elimination or correction of contributing factors is one of the essentials of therapy. Withdrawal of the drug is one method of treatment. Diminution of the dosage is preferable to complete elimination, and several cases have been benefited considerably in this manner. Normally this infers an immediate cessation of further enlargement, rather than a subsidence of the hyperplasia.

Genuine abatement of the overgrowth can be produced by conservative periodontal treatment, which is recommended in the majority of cases and includes maintenance of scrupulous oral cleanliness, vigorous stimulation by massage and toothbrushing, elimination of mechanical irritants and home care. If the hyperplasia is resistive and unsightly, tissue excision is advocated. The hyperplasia tends to recur promptly after treatment unless the contributing factors are eliminated and home care is maintained. The overgrowth disappears entirely if the teeth are removed, even though dilantin medication is maintained.

General Anaesthesia for Oral Surgery

by R. QUENTIN ROYER, D.D.S.

Oral Surgery, Oral Medicine and Oral Pathology. June, 1954.

The need for general anaesthesia has persisted for several reasons: some patients are apprehensive concerning operations in the mouth; often the field of operation is inflamed and the effectiveness of local anaesthesia is thereby reduced; frequently there is need for surgical procedures in various parts of the mouth at the same time, and many patients object to multiple needle punctures; occasionally patients react to local anaesthesia in an untoward way. In addition,

a number of patients who undergo oral surgery are children, many of whom cannot cooperate with the surgeon. For such patients, the procedures are most efficiently accomplished with the aid of general anaesthesia.

Since agents for intravenous administration have been available, the patient has had minimal postoperative discomfort from the anaesthesia. This was not his lot when ether was used. Combined general anaesthesia has increased the amount of oral surgery that can be performed at one time, thus reducing the number of operations. All the teeth, or multiple unerupted teeth, can be removed at one operation. Concomitantly, the patient is spared mental stress and expense,

and the task of the surgeon is simplified. These advantages were not experienced when local anaesthetic agents or nitrous oxide-oxygen only were used.

No one technique of anaesthesia is efficient under all situations that arise in the practice of oral surgery. Excellent results can be obtained with nitrous oxide-oxygen alone under some circumstances. Intravenous anaesthesia alone is satisfactory for uncomplicated, quickly terminated

procedures. However, it is apparent that the intravenous method, combined with the inhalation method, in the majority of cases is the most satisfactory anaesthetic procedure yet used in oral surgery. The combined use of Pentothal Sodium and nitrous oxide-oxygen seems to augment rapid recovery because the quantity of the agent that is given intravenously is reduced. Moreover, for patients who constitute poor risks, the combined method increases the safety factor.

Treatment of fractures of the mandible with intraoral appliances.

by HENRY B. CLARK, Jr., M.D., D.D.S.

Journal of Oral Surgery. April, 1954.

Fractures of the mandible are best treated by the simplest appliance that will fulfill the criteria of good reduction, intimate contact of bone ends and absolute immobility.

Greater success will be achieved by the repeated use of relatively few techniques, so that the limitations and possibilities will become well known to the operator.

Indirect dental fixation with good ap-

positioning of fragments is achieved by the use of Risdon arches and intermaxillary tie wires.

When long-term direct dental fixation is required, cast silver cap splints provide the maximum of rigidity, security and cleanliness. In selected cases the mouth may be left open during treatment.

Fractures of the edentulous mandible should be treated by conservative means when possible, as good union even with slight displacement constitutes a satisfactory result. If surgical intervention is indicated, direct skeletal fixation together with antibiotic therapy will give gratifying results.

Preserving Natural Teeth Through the Use of Clasps

by M. M. De VAN, D.D.S., Philadelphia, Pa.

The Fortnightly Review of the Chicago Dental Society. May, 1954.

Clasps should be looked upon as a necessary evil—necessary to retain and support the substitutes for the missing teeth.

The portion of the clasp that is most dangerous is the retainer-clasp arm; the portion most beneficial is the occlusal rest—the vertical saddlewise stabilizer.

Infrabulge retainers should be used whenever esthetics will permit.

Every possible means should be employed to stabilize the partial denture by the extensive use of occlusal rests on auxiliary abutments.

An effort should be made to secure retention by other means than spring tension. The possibility of securing additional retention should be explored—retention by contacting two or more parallel surfaces with struts and by meticulous adaptation of saddles and broad ribbon-like connectors with mouth tissues.

Characteristics of functionally optimal occlusion and principles of occlusal rehabilitation.

By HENRY L. BEYRON, L.D.S., M.S.D.,
Stockholm, Sweden

Journal of the American Dental Association, June, 1954.

Functionally optimal occlusion is occlusion in functional harmony with the integral parts of the masticatory system. It ensures efficient functioning without placing undue strain on the integral parts. In particular, the occlusion should be favourable to the supporting tissues of the teeth. There is no specific pattern of functionally optimal occlusion which may serve as a general basis for the appraisal of the individual case. Functionally optimal occlusion may vary considerably in pattern.

It is, however, possible to deduce from research in various fields certain characteristics of functionally optimal occlusion, with particular regard to occlusal stress. These characteristics will provide the basis for the principles of rehabilitation. The main characteristics and principles which have been determined are:

1. Stress. The teeth should receive stress consistent with physiologic requirements for the stimulation of the supporting tissues. Axial stress, that is, the direction of stress on the individual tooth, should coincide as closely as possible with the long axis of the tooth.

2. Distribution of stresses. The total load should be distributed by interproximal tooth contact in centric position among all teeth and in eccentric positions primarily among teeth in the engaged tooth segment.
3. Closure without interference in centric maxillomandibular relation. The mandible on closing in centric relation should close into the position where cusps and inclined planes interdigitate without interference, that is, the intercuspal position.
4. Proper interocclusal clearance. The occlusal vertical dimension should be determined by proper interocclusal clearance between the rest position and the intercuspal position.
5. Free gliding movements. Excursive movements with the teeth in contact, especially in lateral gliding, should be made without interference. The attainment of this objective is facilitated by flat gliding paths and simultaneous contact in eccentric positions among several teeth in the engaged tooth segment.

By collating these characteristics and principles, it is possible to form a clear concept of what constitutes optimal occlusion. First, with these characteristics as a basis, it is possible to evaluate the occlusion of an individual. Secondly, by conducting the treatment according to these principles of rehabilitation, the best functional conditions for the dentition of the individual can be realized.

The Mortality of Doctors in Relation to their Smoking Habits.

By RICHARD DOLL, M.D., M.R.C.P.,
and A. BRADFORD HILL, C.B.E., F.R.S.

British Medical Journal, June 26, 1954.

At the end of 1951 some 40,000 men and women on the British Medical Register replied to a simple questionnaire relating

to their smoking habits. On that basis they were divided into non-smokers and three groups of smokers (including ex-smokers) according to the amount they smoked at that time (or when they gave up).

The certified causes of death of those men and women who have since died have been supplied by the Registrars-General of the U.K. over the ensuing 29 months.

This preliminary report is confined to the deaths among the 24,389 men over the age of 35.

Though the numbers of death at present available are small, the resulting rates reveal a significant and steadily rising mortality from deaths due to cancer of the lung as the amount of tobacco smoked increases. There is also a rise in the mortality from deaths attributed to coronary thrombosis as the amount smoked increases, but the gradient is much less steep than that revealed by cancer of the lung. The other groups of deaths so far analysed reveal no gradient

(other forms of cancer, other forms of cardiovascular disease, respiratory diseases, all other causes).

The figures for cancer of the lung are in conformity with those found previously in an extensive enquiry into the smoking histories of patients with cancer of the lung and with other diseases.

The death rate of doctors here reported is, almost certainly, artificially low. There is evidence that this is due to a reluctance, or inability, of persons suffering from a fatal illness to reply to the questionnaire.

Functional relations of the stomatognathic system.

By ERNEST R. GRANGER, D.D.S., Mt. Vernon, N.Y.
Journal of the American Dental Association, June, 1954.

The functional relations of the teeth to their supporting structures is one of the determining factors in the metabolism of these structures. These functional relations are also influenced by the degree of harmony between occlusal forms of the teeth and functional movements of the temporomandibular joint. The muscles of mastication provide the means of mandibular movements, but the joints determine the paths of motion. The irregularities of mandibular paths require the form of

cusps to maintain equal simultaneous contact between the teeth in all excursions, with forces directed in the long axis of the bone as determined by its architecture.

A healthy arrangement of teeth thus requires that the form of the cusps be in harmony with the supporting structures, and the functional movements of the cusps be in harmony with the functional relations of the temporomandibular joint. In nature this harmony between the supporting structures and the temporomandibular joint is achieved by the form and position of the occlusal curve, so that man, the omniverous animal, can combine the shearing and milling actions without injury and maintain them within metabolic limits.

Warpage Produced by Soldering with Dental Solders and Gold Alloys

by R. R. STEINMAN, D.D.S., M.S.

The Journal of Prosthetic Dentistry, May 1954.

The more precise the fit of the parts to be soldered, the less they will be distorted. This is true whether the joints considered are of wires or of bars. The amount of solder used to produce the joint is important. The less solder used to produce the union, the less the distortion.

An invested joint will have less distortion than one of a similar shape which is not invested. This is only true when the joint which is invested is allowed to bench cool after the soldering operation is completed. The bench cooled trials showed less distortion than those which were plunged. The best results are obtained with a precision fit of the joint which is invested and allowed to bench cool after the soldering operation is completed. The reheating of a joint is contraindicated because it will produce non-uniform changes.

RESEARCH

FOREFRONT OF CANADIAN DENTISTRY

A study of dentofacial morphology and temporalis muscle activity in normal seven year old children, employing cephalometric radiography and electromyography

by E. B. COOK, Department of Orthodontics, and G. W. STREET, Faculty of Dentistry, University of Toronto.

The purpose of this study was three-fold:

1. To determine the normal range of variation in the dentofacial skeleton.
2. To analyze normal temporalis muscle activity.
3. To determine if there is a correlation between temporalis muscle activity and variations in the dentofacial complex.

The group selected comprised forty children, 5 to 7 years of age, equally divided as to sex. Subjects were selected on the basis of normal occlusion, good lip posture, good health and lack of apprehensiveness.

Dental casts, cephalometric radiographs, and electromyographic records were obtained for each subject. Cephalometric radiographs were assessed by a linear and an angular analysis, and these data were evaluated statistically. All linear measurements were made at right angles to occlusal plane. The angles used were formed by the intersection of the following planes:

- Nasion to A point
- Bolton plane
- Sella to Nasion plane
- Bolton point to Anterior nasal spine (ANS plane)

- Occlusal plane
- Mandibular plane

A graphic method of summarizing muscle activity portrayed by the electromyograms was devised for assessment and comparison with other data.

The findings were as follows:

1. The mean closure path was found to be 0 from physiologic rest to occlusal contact, the range being -3 mm. to 3 mm.

2. Positive correlations:

(a) Bolton plane—ANS plane angle with Bolton plane—Mandibular plane angle to a 5% level of probability.

(b) Bolton plane—Facial plane angle with angle SNA; girls to 1% level, and boys to 5% level.

(c) ANS plane-occlusal plane angle with ANS plane-mandibular plane angle, to 1% level in boys only.

3. Negative Correlations in Girls: to 5% level

(a) Bolton plane-Occlusal plane angle with Bolton plane-Facial plane angle.

(b) Bolton plane-Facial plane angle with Bolton plane-Mandibular plane angle.

(c) Bolton plane-Facial plane angle with Bolton plane-ANS plane angle.

4. Sex differences:

(a) Maxillary length (a to Ptm) significantly greater in boys to 1% level of probability.

(b) Ratio of maxillary to mandibular jaw length.

(c) Ratio of middle cranial base (Glenoid fossa to Ptm), to mandibular length shows a trend to be greater in girls. (10% level).

(d) Girls show a relatively greater upper face height (5% level) as indicated by Bolton plane-ANS plane angle.

(e) Boys show a trend to greater lower face length (15% level) as indicated by ANS plane-mandibular plane angle.

5. No sex differences were observed in the activity of the temporalis muscle.

6. Twenty-seven subjects who showed uniform activity of all portions of the tem-

poralis muscle in physiologic rest, but only 4 showed uniform activity in occlusal contact.

The hyperactivity observed in the remainder of the subjects could not be re-

lated to variations in the facial skeleton. However, dental factors such as tooth interference and tooth eruption appear to be related to muscle activity.

Topical application of sodium fluoride

by M. JACKSON and M. A. COX, Faculty of Dentistry, University of Toronto.

This project was conducted at Hartman Jones Memorial School in East York. Its purpose was to evaluate topical application of sodium fluoride as a method of caries control and to attempt to confirm the benefits reported by Knutson et al.

Oral examinations were made and bite wing x-rays taken of 476 children. Caries was recorded according to site and degree of involvement. Fillings and ex-

tracted teeth were also recorded. Children were divided into two equal groups, the first of which received a prophylaxis followed by an application of sodium fluoride, the second group received a prophylaxis followed by an application of water.

The procedure was repeated in approximately one year and at the end of two years the children were re-examined. Only pairs of children who had remained in the project area throughout the entire project were included in the tabulation. The data indicate a reduction in dental caries in the experimental group of approximately 30%.

The temporo-mandibular joint: its component parts: its function and its derangements

by A. A. ANTONI, Department of Surgery, Faculty of Dentistry, University of Toronto.

Over one hundred individuals exhibiting joint derangement constituted the sample in this study. It was found that malocclusion plays a big part in the etiology of temporo-mandibular joint disorders, and that a conservative form of treatment invariably improves the condition and should therefore be always given first consideration.

Hydrocortone acetate was injected into the joint compartments in 46 cases and was found effective in reducing inflammatory changes within the joint. It is only palliative and temporary, but its use is to be recommended because by reducing inflammatory pain and trismus, it allows an orderly programme of occlusal rehabilitation.

Nine menisectomies were performed, but the results obtained were not entirely satisfactory. 18 condylectomies were carried out and the results indicate that this is the surgical procedure of choice. Four extremely luxating joints were injected with sodium morulate with good results.



A SCENE AT THE GOLF COURSE — ST. ANDREWS-BY-THE-SEA

With many of its fairways stretching along the rugged coast of Passamaquoddy Bay, the Algonquin golf course at Saint Andrews-by-the-Sea is not only one of the most picturesque courses in Canada but is also acclaimed by experts as a first-rate competitive course.

At many spots on the course, even the most ardent golfers will pause to look at the view of the sparkling waters of the bay dotted with islands and fishing boats, stretching out before them.

The club house where refreshments and lunches may be obtained is only a half-mile from the Algonquin Hotel. So bring your golf clubs when you come to the C.D.A. Convention this September.

Cheques and Money Orders for registration fee of \$15.00 should be made payable to the New Brunswick Dental Society and mailed to Dr. S. K. Wetmore, Joint Convention Committee Secretary, 147 Germain Street, Saint John, N.B., together with applications for hotel reservations.

DOWN TO THE SHORE IN FIFTY-FOUR

EDITORIAL

Controlled Therapeutic Suggestion in Dentistry

A subject which has been receiving a great amount of interest, and incidentally rather sensational promotion in the lay press, is hypnotism. One large Canadian daily newspaper recently presented a series of prepared articles by its science reporter in collaboration with a stage hypnotist. This performer has certain aspirations for developing a so-called Institute of Hypnotherapy, the purpose of which would be to render instruction in hypnotism to dentists and physicians. Obviously, in view of the fact that men such as Moss, Stalzenburg, and Ament, well-trained in the science of psychosomatics, and having the professional appreciation of the art which is so essential for its scientific utilization, are available, it would be most unwise for either profession to associate itself with an organization outside its own orbit. Dentistry should have no wish or desire to be placed upon a stage.

The field of hypnosis is very broad and in a limited way dentistry can utilize probably two of its uses. In the first instance hypnosis may be used to allay apprehension and anxiety. By far the greater usage is directed toward this end. Occasionally the employment of hypnosis is designated to the actual production of a state of anaesthesia.

Dr. Bernard B. Raginsky while addressing the Ottawa Dental Society remarked that "hypnosis may be likened to a psychological scalpel which is used to cut through a patient's conscious and unconscious resistances. It may then be utilized as a psychological microscope to bring into clear focus psychologic material which otherwise might appear hazy and disconnected. One might then use it as a psychological curette to remove "debris" and to channel emotions more normally into the mainstream of the personality. Finally it may be used as an absorbable psychological suture to hold together suggestions made during the treatment. One must, however, be as adept with this type of scalpel as the surgeon is with his; no less trained in the use of this type of microscope than is the pathologist in the use of the optical microscope; otherwise failure and damage may ensue".

It is not, however, necessary to achieve a "state of mind produced by oneself or another akin to sleep (i.e. trance)" as the dictionary definition states in order to be open to therapeutic suggestion. Psychosomatic relaxation is a condition in which it is unnecessary to be put in a trance in order to accept suggestion. This method is sufficient for the vast majority of nervous or apprehensive patients.

Psychology has been a science for at least fifty years and as a science has thoroughly studied the psychological phenomenon of "psychosomatic rest", and two psychologists in the mid-western states, Burgess and Heron were the first to teach dentists some of the basic principles and understandings of the procedure. A Society of Psychosomatic Dentistry was formed and at the same time in the east another group organized the Society of Hypnodontics. This latter name is rather unfortunate because it tends to associate dentistry with a mystical procedure and such a mating is undesirable in view of the public association of hypnosis with stage presentations and public exhibitions.

Several dentists in this country are presently practising psychosomatic relaxation or rest in their respective offices. It is undeniably true that in capable hands this scientific aid is a desirable adjunct to the practice of dentistry. Speaking of the entire field of

scientific hypnosis, Dr. M. V. Kline writing in the *Journal of Clinical and Experimental Hypnosis* stated that "scientific hypnosis today is capable of standing on its own objective merits in relation to criteria of methodology, significance, usefulness, productivity, and capacity for permitting workers in the behaviour sciences to move toward a more holistic frame of reference".

It might be wise however, in this the neophyte stage of the development of the art of suggestion as it relates to dentistry, to develop and enunciate sound precepts for its practice. Demonstrations before members of the lay public should not be performed nor should this science be utilized in any way as a means of a subtle or outright form of advertising. Its usage should be directed solely to the practice of dentistry and should in no way attempt to eliminate the desirable use of anaesthesia.

Properly controlled and developed the science of psychology as applied to the practice of dentistry will have a great deal to offer to our profession. Its future appears to be bright and fruitful.

Book Review

Maxillo-Facial Laboratory Technique and Facial Prostheses. By Stanley Brasier. Published by Henry Kimpton, 25 Bloomsbury Way, London, W.C.1, England. Pages 232. Price: 31/6.

This is a very welcome and valuable volume to the Prosthetic technician who may be called upon to construct splints and appliances for maxillo-facial purposes. The author is to be commended on the comprehensiveness of the volume and its excellent illustrations. It is beautifully written and very easy to read.

The author I would judge is a man who has had a long and extensive experience as a prosthetic technician; in various instances he suggests

that newer and modern techniques and equipment may be used, but he describes the methods and equipment that have stood the test of time. The Laboratory set-up he describes and illustrates is rarely found in a General Hospital but may be found more often in a Military Hospital. It is very well arranged and equipped and this is essential if the work is to be done properly.

This work describes the construction of metal splints for immobilization of jaw fractures, trismus appliances or exercisers, saliva traps and obturators. Also is described prosthetic appliances and splints for other parts of the body.

This volume should find a place in every dental laboratory, dental college and every hospital and medical library. The techniques and ideas are basic and should not soon become antiquated.

Frank Martin.

The Library

Additions:

ANDERSON, W. A. D. Pathology. 2nd ed. 1953. 1393p. illus.
BUNTING, R. W. Oral hygiene. 2nd ed. 1954. 283p. illus.
COMROE, B. I., COLLINS, L. H., and CRANE, M. P. Internal medicine in dental practice. 4th ed. 1954. 563p. illus.
GINSBERG, E. L. Public Health is people. 1950. 241p.

MUSTARD, R. S. An introduction to public health. 3rd ed. 1953. 315p.
NATIONAL RETAIL CREDIT ASSOCIATION. Physicians and dentists credit and collection manual. 1953. 55p. illus.
MCNEIL, C. K. Oral and facial deformity. 1st ed. 1954. 127p. illus.
PRATT, R. Antibiotics. 2nd ed. 1953. 398p. illus.
TYDINGS, K. S. A guide to medical and dental photography. 1953. 124p. illus.
WEITZENHOFER, A. M. Hypnotism; an objective study in suggestibility. 1953. 380p.

The Association

1954 Annual Meeting
St. Andrews-by-the-Sea, N.B.
Board of Governors — Sept. 1st - 4th
Convention — Sept. 5th - 8th

Preliminary programmes have been mailed to all members. Reservation forms should be sent in promptly. Present indications are that all available hotel space will be taken up.

Honourary Degree Conferred On President

At the Commencement Exercises of St. Joseph's University, Moncton, N.B., held on May 25th last an honorary degree of Doctor of Science was conferred on Dr. A. J. Coughlan, President, Canadian Dental Association.

Fluoridation and Mortality

The May issue of U. S. Public Health Reports contains the report of a study of the mortality experience of 32 pairs of fluoride and non-fluoride cities. The total population considered in the study was 892,625 persons in fluoride cities and 1,295,500 in non-fluoride cities. A city with 0.70 p.p.m. or more in its water supply was considered a fluoride city and a city with 0.25 p.p.m. or less in its water supply was classified as a non-fluoride city.

"The average mortality rate for all causes of death was 1,005.0 per 100,000 population in non-fluoride cities and 1,010.6 in fluoride cities. In 16 pairs the rate was higher in non-fluoride cities, and for 16 pairs it was higher in the fluoride cities. There is no statistically significant difference between the mortality rates for all causes of death in fluoride and non-fluoride cities. The significance of the differences was determined from the differences between the pairs.

The similarity of mortality experience is true for the five causes of death selected for study. The mortality rate from heart diseases for all non-fluoride cities was 357.4 per 100,000 population as compared with 354.8 per 100,000 in fluoride cities. In

17 of the comparisons the rate was higher in the non-fluoride cities; in 15 pairs the rate was higher in the fluoride cities.

Cancer deaths occurred at the rate of 139.1 per 100,000 population in non-fluoride cities and 135.4 per 100,000 in fluoride cities. In half of the 32 pairs the rates were lower in the fluoride cities.

Intracranial lesions were the cause of death in 104.8 per 100,000 population in non-fluoride cities and 111.5 in fluoride cities, with the rate higher in non-fluoride cities for 13 of the 32 pairs.

The nephritis death rate was 26.7 per 100,000 in the non-fluoride cities and 21.9 in the fluoride cities. In 19 pairs the rates were higher in the non-fluoride cities.

For cirrhosis of the liver the mortality rate per 100,000 population was 8.2 for non-fluoride cities and 6.6 for fluoride cities and the rates were higher for non-fluoride cities in 17 pairs.

Summary

1. This report presents an analysis of mortality from all causes and from five selected causes—heart disease, cancer, intracranial lesions, nephritis, and cirrhosis of the liver—in 64 cities in 16 States, and compares rates in those cities in which water analyses show the fluoride content to be 0.25 p.p.m. or less with those cities where the fluoride content is 0.70 p.p.m. or more.

2. These data show no statistically significant difference between the mortality rates of fluoride and non-fluoride cities for all causes or for heart disease, cancer, intracranial lesions, nephritis, or cirrhosis of the liver."

Specific Information —

Hansard, 13 May, '54.

"Request for early introduction of Legislation

On the orders of the day:

Mr. Stanley Knowles (Winnipeg North Centre): Mr. Speaker, may I direct a question to the Minister of National Health and Welfare? In view of the an-

nouncement a day or two ago from the Ontario Medical Association concerning proposed increases in doctors' fees, will the government consider moving a little faster in the introduction of nation-wide health insurance, with provisions for the provinces to participate as they may wish to do so?

Hon. Paul Martin (Minister of National Health and Welfare): Mr. Speaker, my hon. friend knows that the government is always giving consideration to these important matters.

Mr. Knowles: May I ask a supplementary question? Was Dr. G. E. Wride speaking for the government a day or two ago when he said that health insurance will continue to be a live issue with the government?

Mr. Martin: I do not know what Dr. G. E. Wride said. The only persons who can speak for the government are members of the government."

Voluntary Pre-Payment Plan for Dental Service Begun

The first community-wide voluntary dental insurance plan known was announced in New York City on May 19th last. The insurance will be available to individuals only through groups of 40 or more, where 75% of the members enroll. Immediate dependants are also covered. As patients come under the plan they will be expected to pay for the correction of existing defects up to \$150.00. After existing defects are cared for, the plan will meet all the costs for families with income below \$5000.00. Each patient is to receive treatment in the private office of the dentist of his choice who is a participant in the plan. All dentists in the metropolitan area of New York are invited to join the plan. Premiums are \$19.80 a year for a single person, \$39.80 for husband and wife and \$72.00 for family coverage. Subscribers earning more than \$5,000.00 a year will be charged the dentists' regular fees. The insurance plan, however, will pay specific amounts to the dentists for the services

rendered thus reducing the cost of dental care to the insured. Participating dentists will be paid according to a set schedule of fees.

Economic Survey

Some 30% of Canadian dentists returned the questionnaire by the closing date of June 1st. The information contained on these forms will be tabulated during the summer months and the information made available as quickly as possible. At the recent meeting of the Executive decision was made to have this factual data examined by a well-recognized firm of analysts.

New Film on Oral Cancer

A film entitled "Oral Cancer—The Problem of Early Diagnosis" (Colour and Sound) has been acquired through the kindness of the National Cancer Institute of Canada. This film is available on loan to local dental societies through the library service. Requests should be addressed to: The Librarian, Canadian Dental Association, 234 St. George Street, Toronto.

Report on the Operation of a Pilot-Model Industrial Dental Service

This report has been issued (May, 1954) by the Dental Health Division Department of National Health and Welfare, Ottawa. As stated in the foreword of the report this project was the outcome of discussions with the C.D.A. Committee on Industrial Dentistry.

"This study project grew out of a series of discussions with the Committee on Industrial Dentistry of the Canadian Dental Association. In 1946-47 this Committee worked with the Dental Health Division of the Department of National Health and Welfare in carrying out a survey for the purpose of obtaining information concerning industrial dental services in Canada, and the attitude of Industry towards such services. The information obtained and the discussions concerning it led to a decision by the Department of National Health and Welfare to set up and operate,

on a trial basis, a model of purely preventive industrial dental service for a limited group of government employees of both sexes working in various capacities."

The conclusions contained in the report are as follows:

1. Industrial dental services are in the course of taking on the same type of preventive aspect as that assumed by general industrial health services.

2. A preventive service is capable of a broad employee coverage, and offers effective health services.

3. It offers many opportunities for correlation with general industrial health services, and with private dentists, with whom a mutually satisfactory working relationship is quite practicable, if steps are taken beforehand to explain to them the functions and aims of the programme.

4. The industrial and office worker will accept and use a preventive service, but the rapidity of its adoption and extension depends not only upon the ability and acumen of the supervising dentist in encouraging its use but also on the degree of interest and cooperation shown by administrative heads and sub-heads, throughout the industry, and also upon the good-will of the local dental profession.

5. Like any other department of the industry it must be busy all the time if it is to pay its way, and provide maximum dividends.

6. The industrial dentist should have

special qualifications. His chief interest should be in the practice of preventive dentistry. He should be a good diagnostician, radiologist, and health counsellor. His relationship with industrial medicine calls for an expansion of his knowledge into this and related fields. He must have the confidence of the local dental profession.

7. Where the group is sufficiently large to require more service than can be rendered by the dentist, the dental hygienist is a very effective ancillary in such a service — and is to be preferred to employing a second or additional dentists. She should be a competent counsellor in addition to being able to render prophylactic services.

8. While a dental service should be closely co-ordinated with an industrial health service it should not be subordinated to that service by becoming a section of it under its medical director. It should report directly and independently, but in association with the medical service, to the administration of the industry. This maintains the working relationship between the medical profession and the dental profession perpetuated by the universities in the training of these professions, and which works so well in private practice.

Issue of Journal Required

The February 1954 issue of the C.D.A. Journal is in short supply. Copies of this issue are urgently required. It will be appreciated if any having available copies will mail them to C.D.A. Headquarters.

Committees and Councils

Dental Education

The annual meeting of the Council on Dental Education was held at the Canadian Dental Association headquarters on June 21 and 22. In addition to a full attendance of the Council membership, four of the five Canadian dental schools were represented by the Dean of the school, and in the case of Dalhousie University, by the Dean-Elect. By invitation, the secretary of the Council on Dental Edu-

cation of the American Dental Association was present throughout the meeting. Recently, the Chairman of the Canadian Dental Association Council attended a similar meeting of the American Dental Association Council in Chicago. This very desirable interchange of visits between the respective Councils will facilitate the exchange of ideas on educational matters of mutual interest.

Attendance of the representatives from the Canadian dental schools not actively

represented on the Council was sought at this meeting because the Survey Committee of the Council presented its first composite report on the five Canadian schools.

Five years ago the Council appointed a Committee to visit and study each of the five dental schools. The Committee was comprised of an outstanding educationist as Chairman, Dean A. C. Lewis of the Ontario College of Education; and two well-known members of the dental professions in the persons of Dr. A. L. Walsh, for many years Dean of the Faculty of Dentistry at McGill University; and Dr. H. W. Reid of Toronto, formerly a member of a provincial licensing board. Thus, general education, dental education, and license board interests were well-represented on the Survey Committee. The Council's terms of reference for the Committee left the Committee free to visit the dental schools, upon invitation from the respective universities, and present a composite report on dental education in Canada when the Committee was ready.

In 1951 the Committee visited the five schools and issued confidential reports to the President of the university concerned, providing also a copy of the report for the Dean. Each of the reports concluded with recommendations for the strengthening of the programme of that school. During the next two years the schools, aided in each case with very positive assistance from the administrative officers of the university, made important changes in line with these recommendations. During the academic session just concluded, a second visit was made and a further confidential report was submitted to the President and Dean. Based upon these reports, the Survey Committee presented its first composite report to the Council at the meeting on June 21 and 22. Important aspects of the Survey Committee's report will be presented at the Board of Governors' meeting in September next.

The Council has been studying the extension of teaching facilities in Canada. A committee under the guidance of Dr.

Wm. Miller of Vancouver, presented a further report on this subject. The Committee's report summarized the results of a conference held in Saskatoon last September at which time the supply of dentists for western Canada was discussed. The report of the Committee also included references to the supply of dentists in other parts of the country. The work of the Committee will continue, and a further report is expected at the next session of the Council.

The Chairman of the Research Committee, Dr. J. B. Macdonald, was present to discuss research with particular reference to its integration in the overall programme of a dental school. The Association's Research Committee is conducting a survey of the physical facilities, manpower, and financial resources which are available for research in the dental schools. The ultimate objective of the Research Committee is to learn how its programme might be of greater assistance to the dental schools.

The Council decided to extend an invitation to the American Association of Dental Schools to hold one of its annual meetings in Canada some time in the near future. The Canadian dental faculties are all members of the American Association of Dental Schools. On at least three occasions since the organization of the A.A.D.S. thirty years ago, a Canadian dental educator has been President of this organization. In 1932, the late Dean W. Secombe held in this office; in 1942, Dr. Arthur L. Walsh; and in 1948 Dr. A. D. A. Mason.

The objective of the Council on Dental Education continues to be the elevation of the standards of dental education in the dental schools. However, in its approach to this objective the Council recognizes the desirability of flexibility in the programme of each school, and freedom from the limitations of one fixed and rigid pattern being set for all to follow.

Roy G. Ellis, Chairman

Economic Security

The Economic Needs of the Professional Man

by E. L. R. WILLIAMSON, M.B.E., B.P.A., F.R.E.S.,

Consulting Economist and Administrator of the
C.D.A. Pension-Assurance Plan.

Medical, dental and surgical sciences are achieving a constantly increasing span of life for the average man and woman. Life expectancy in Canada has increased 5.2 years for men and 7.0 years for women in the period 1931 to 1947, with even larger increases in prospect for those now in early life.

At the same time the increasing pressures and tensions of modern life are making it necessary, or at least desirable, for men and women to retire from gainful employment at earlier ages.

Thus, with natural life lengthening, and working life shortening, there is an ever-increasing period which must be provided for through savings. *Effective saving, however, has been made difficult by low interest rates, high taxation, and wide fluctuations in investment values.*

In many ways, the problem of economic security is more difficult for the professional man than for any other because, in addition to all the ordinary hazards he is beset by the following unique circumstances:

1. The very substantial investment which he must make in time and money in preparing himself for his profession is *put into a single, living asset*—his personal skill—which vanishes the moment he ceases practice or dies.
2. The single resource possessed by the professional man is his future earning capacity; he must set up a "sinking fund" which will replace his used-up earning capacity as he advances in age.
3. Further, in the event of illness or accident, the income of the professional man immediately ceases; because he in himself is his entire enterprise, he does *not* possess a factory or business organisation which will continue to earn for

him despite the fact that he temporarily is not directing it.

4. In order successfully to practise his profession, the professional man, above all others, must have freedom from worry concerning the future security of himself and his family.
5. He must also have freedom from the constant distractions of attempting to manage his own investment programme, because either he will lose all his savings through inadequate attention to his investments, or he will become a good investment man with a part-time professional practice.

If he is not to gamble blindly, the professional man must forecast his economic needs in the various contingencies which are of common and statistically predictable occurrence.

Let us suppose the case of a dentist, age 38, whose wife is 35. They have two children, ages 5 and 2, and a home with an \$8000.00 mortgage. What will be the economic needs if:

- (a) He is stricken with a serious illness (16.2 times more likely than accident)—say gastro-intestinal—most frequent cause of disability amongst dentists according to Mayo Clinic survey—or, after lengthy treatment he is disabled from practice but not confined to bed; frequently as a result of cardio-vascular or arthritic condition:
 - (i) Hospitalisation: 3 weeks in hospital, operating room, X-Rays, laboratory services, special drugs, intravenous solutions, and anaesthesia probably \$750.00
 - (ii) Surgeon's fees 300.00
 - (iii) A new source of income for so long as he lives, say to 59, with a monthly need of at least 300.00
(300 x 12 x 21)\$75,600.00
 - (iv) Maintenance of his life assurance contracts through "waiver of premium" since his wife will have a life expectancy of 27 years, after his decease, with a monthly need of 125.00
at least—\$125.00 x 12 x 27 40,500.00
This man's illness demands total resources of 117,550.00
- (b) Instead of a long period of disability, his illness' results in his premature decease:
 - (i) Clean-up fund (There are, legally, 17 categories of claimant having precedence over the widow) \$2,500.00
 - (ii) A new source of income to feed, clothe, house and educate two children and

keep the home together—a monthly need of	300.00
until the youngest child is 21	
\$300.00 x 12 x 19 years	68,400.00
(iii) Discharge of the mortgage so that the family's shelter will be secure	8,000.00
(iv) A life income for the widow whose life expectancy at age 54 is 28.9 years, at a monthly need of	125.00
\$125 x 12 x 21 years	43,350.00
In the event of premature decease, his resources must produce a total of	122,250.00

(c) Even if suffering no major disaster, he will need throughout his professional career a financial resource which has a "guaranteed market at a guaranteed price" to meet either emergency or opportunity. Say at age 55, an immediately available sum of\$21,000.00

(d) When he reaches retirement age, after a lifetime of service, a monthly need of \$300.00 and, having a normal life expectancy of 16.45 years at that age, a total of.....\$59,220.00 (But statistically he is not sure to be dead until 109 years!)

Or, a Joint and Survivorship Pension for his wife and himself so long as either lives\$268.00 worth, at their joint life expectancies\$73,302.00

These are the economic needs of an average professional man. They will fluctuate with the individual, but "the application of modern science to business affairs is towards the elimination of chance—hence Insurance.", and it is scientifically possible to meet these needs by the systematic application of 15 to 20% of average income. . .

"If I had my way, I would write the word 'Insure' over the door of every cottage and upon the blotting book of every public man, because (it) can secure them against catastrophes which otherwise could smash them up forever."

—Rt. Hon. Sir Winston Churchill, K.G., O.M.

The Corps

Brigadier E. M. Wansbrough has returned from an inspection of service dental facilities in the United Kingdom and Europe.

The following postings of senior officers in the Corps have been announced:

Lt.-Col. A. C. Leman is posted from Camp Borden to the Adjutant-General's Branch, Army Headquarters, Ottawa.

Lt.-Col. O. W. Crummey is posted from the A. G. Branch A.H.Q. to Camp Borden.

Lt.-Col. B. P. Kearney, formerly C.O. of No. 25 Canadian Field Dental Unit in Korea is posted to A.H.Q. clinic in Ottawa.

The following appointments of senior officers have been announced:

Lt.-Col. G. B. Shillington, now Commandant of the R.C.D.C. School, Ottawa, is appointed C.O. of 11 Coy. R.C.D.C., Edmonton, Alberta.

Lt.-Col. I. A. L. Millar of the office of the D.G.D.S. is appointed Commandant of the R.C.D.C. School, Ottawa.

Lt.-Col. F. J. MacLean, now C.O. of 11 Coy. R.C.D.C., Edmonton, is appointed C.O. 14 Coy. R.C.D.C., Winnipeg, Manitoba.

Lt.-Col. J. A. MacGowan, now C.O. 14 Coy.

R.C.D.C. Winnipeg, is posted to the A.G. Branch, A.H.Q., Ottawa.

Lt.-Col. I. A. L. Millar is representing the Directorate of Dental Services during the Canadian Army Militia Training period at Camps Utopia and Niagara.

Arrangements have been completed for the loan of selected non-consumable stores to Dr. Malcolm Brown of Kingston General Hospital to accommodate a party from Queen's University travelling to Southampton Island, N.W.T., on Defence Research Project No. 80.

Cpts. J. C. E. McDonald and G. J. LaHaye have returned on compassionate leave from Europe.

Officer Cadets J. R. Fraser of Dalhousie University, R. N. Munro of the University of Toronto and R. G. Perry of the University of Alberta are employed in Europe with No. 2 Battalion of the Royal Canadian Regiment and No. 1 Field Dental Unit.

Colonel F. R. Drewry inspected No. 9 Field Dental Company, Calgary, Alberta, No. 8 Field Dental Company, Vancouver, B.C., No. 10 Field Dental Company, Saskatoon, Sask., and No. 6 Field Dental Company, Winnipeg, Man., in connection with the R.C.D.C. Militia General Efficiency Competition.

The Provinces

Alberta

The **Alberta Dental Association** sponsored its first Dental Health week. It was postponed until the first week of May due to the amount of time required to adequately prepare for the week and out of consideration for the rural communities where winter influences their mode of travel.

Several meetings with committee heads of the four areas of the Province along with the President of the Alberta Dental Association were held in Calgary throughout the winter. The following plans were decided upon:

1. A series of four prepared addresses on Dental subjects were prepared and edited by a committee. These subjects were mimeographed and made available to every area in our Province.

(a) Home and School Associations were notified that Dentists were available for speeches during Dental Health Week. The local Home and School Association then approached the local dentist who was able with a minimum of effort to deliver an acceptable speech suitable for his locality.

(b) Committees were set up in the larger centres to hook speakers to address assemblies of Junior High and High School students. Over six hundred students attended one particular lecture.

(c) First year University students were given a lecture on entering Dentistry as a profession.

2. 36,000 pamphlets were distributed throughout the Province. These pamphlets were obtained from the Canadian Dental Association and the Department of Health and Welfare. Seven thousand posters were placed in Drug Store windows and in school rooms throughout the Province.

3. Mrs. Joan Engman, Dental Hygienist of Calgary was given leave of absence from her position with the City Health Department and was taken to Lethbridge where she addressed interested Mothers and public school students in all of the schools in that area. Mrs. Newfeldt, Dental Hygienist, from the city of Edmonton was taken to Red Deer where she addressed public school students of 23 schools on the subject of Dental care. As these two ladies are the only two Hygienists in Alberta it was felt that introducing this service to other areas, additional Hygienists might be over come in this Province.

4. A Public Relations Firm was obtained.

Stewart Bowman and McPherson obtained for us much free time on the Radio and in the Press.

(a) John Fisher spoke on Dentistry on a Province wide hook-up for fifteen minutes.

(b) The President of the Alberta Dental Association introduced Dental Health week and following his address the Medical Health officer for the year spoke.

(c) Special announcements regarding Dental Health week were given throughout the week.

d. The Happy Gang on a nation hook-up gave Alberta Dental Health week some time.

e. The Mayor of various cities spoke on Dental Health Week.

f. Paid announcements were inserted in the important papers throughout the province, announcing the dates of Dental Health Week and containing a slogan.

g. Commercial firms, milk companies, drug companies and so on were asked to include Dental Health Week in their advertising programme. The co-operation obtained was astonishing.

5. The local Dental Societies held a special programme the first evening of the Dental Health week to dedicate the week. Following is the report of the evening held in Calgary.

Alberta

Dr. O. L. Oatway was elected president of the **Central Alberta Dental Society** at the annual meeting. Other officers named were: Vice-president, Dr. J. Moore of Lacombe; Secretary-treasurer, Dr. Gordon Travis; Executive committee: Drs. M. Boyce, D. Culham, A. Goodman and G. Page.

Dr. M. Lipkind of Calgary was guest speaker at this meeting, and his subject was the treatment of diseases of the gums.

At a special meeting of the **Calgary Dental Society** held on May 3rd in the [Sun Room of the Palliser Hotel, Dr. James Zimmerman gave an address "Prevention is the Key Note for Dental Health [Week." He mentioned how prevention might close the gap between the need for service and the number of Dentists available to render that service. He illustrated how Dental Hygienists and educational programmes would also alleviate the strain placed upon the profession. Dr. Zimmerman spoke on the work of the Alberta Dental Association and their devotion to public service.



Calgary Dental Society honours Dr. E. M. Doyle. Left to right: Dr. John W. Clay, Dr. R. Duncan, Dr. J. Zimmerman and Dr. Doyle.

Photo: Jack De Lorme, *Albertan*, Calgary

Following Dr. Zimmerman's address, Dr. John W. Clay presented Dr. E. M. Doyle with a suitably engraved sterling silver cigarette box, upon the completion of Dr. Doyle's fifty-five years in Dental practice. Dr. Clay told of Dr. Doyle being on the organization of the Board of Governors of the North West Territories. He showed how Dr. Doyle had helped organize Dentistry before Alberta was a Province. He told of Dr. Doyle's keen interest in the advancement of the profession from the time when Dentistry first began.

Dr. Doyle thanked the gathering for their kindness and mentioned that his greatest delight in life was doing something for dentistry.

Dr. Ralph Duncan, President of the Dental Society, wished everyone success in their part of Dental Health Week and closed the meeting.

—L. B.

Saskatchewan

On June 9th Dr. W. E. Koch, Jr. of St. Louis, Missouri, under the auspices of the Saskatchewan Dental Association, presented to the **Saskatoon Dental Society** a clinic on Dental X-Ray interpretation and diagnosis which was most favourably received by all those in attendance.

Dr. Koch, in addition to practising radiodontics in St. Louis is also professor of dental radiology at Washington University School of Dentistry and associate professor in the Medical College at the same university.

With the aid of an excellent series of X-Ray slides he outlined in detail the proper technique to be used in taking and processing dental X-Rays. He stressed the importance of taking more than one X-Ray of an area if the diagnosis were difficult or in doubt and showed several cases where such

procedure resulted in a correct diagnosis being made.

A considerable portion of his clinic was given over to illustrating the more common types of tumors and cysts found in the oral cavity.

Dr. Koch also mentioned the necessity of using a biopsy as well as X-Ray in certain of these cases to assist one in making a diagnosis.

At the May meeting of the Saskatoon Dental Society the executive for the 1954-55 season was elected and is as follows:

President: Dr. A. C. Blue.

Vice Pres.: Dr. P. Rabatich.

Sec'y Tres: Dr. H. H. Cowburn.

L. D. H.

British Columbia

Twenty-three candidates passed the examinations set by the **College of Dental Surgeons** entitling them to practise in British Columbia. One dental hygienist who graduated from West Virginia was also successful.

At a convention of the B. C. Surgical Society held at Harrison Hot Springs recently, **Dr. Hamilton Simmons** of the dental staff of Shaughnessy Hospital at Vancouver gave his lecture illustrated with slides on "Treatment of Prognathism". (Journal of the C.D.A., October 1952) The discussion was opened by R. G. Langston, M.D., plastic surgeon at Shaughnessy.

After several years of study and consultation, the committee of the B. C. Dental Association on **Workmen's Compensation Board** has at last been granted a finalized fee schedule. In nearly every instance the fee asked was granted. Credit goes to Drs. Leslie Marshall, Frank Smith and Max Nacht for their efforts in having this type of dental service adequately remunerated.

The **Vancouver and District Dental Society** held its spring golf tournament at the Burquitlam course in May. (There were 19 holes.) Dr. Alex Dobbins won low gross with a 79. Second low gross was tied by Drs. T. Nikiforuk and A. Campbell with 82. Dr. M. Krasnoff won 3rd low gross with 83. Two players tied for first low net with 63; Drs. Orville Wright and Wm. Elliott. Dr. Dick Butler was second low net with 68. Dr. John Folkins won high net with 115 blows. The other prize winners were: Drs. M. Waterman, S. Moscovich, L. Moreside, R. Cline, K. Tawse and I. Naimark.

Fifty dentists from British Columbia, most from the Interior of the province, attended the ninth **Pacific Coast Dental Conference** at Banff in June. Dr. D. J. Sutherland of Vancouver was named First Vice President.

—D. H. M.

Ontario

Cornwall and District Dental Association re-elected Dr. M. O. Good as their president, at a meeting held recently. Also re-elected were Dr. W. M. Stevenson, vice-president, and Dr. W. C. Sullivan, secretary-treasurer.

Brant County Dental Society recently honoured its president, Dr. R. L. Scott, who has been elected president of the Canadian Society of Dentistry for Children. Dr. J. H. Moyle made a presentation to Dr. Scott on behalf of the Society and paid tribute to his efforts in respect to dentistry for children. Dr. W. H. Hutton and Alderman K. Lefebvre voiced similar praise.

Dr. William Feasby of Hamilton was guest speaker at this meeting, and his subject was dentistry for children. Dr. Hugh Smith presided.

During the business session, the statistics of the effects of fluoridation in Brantford were reviewed, and the dentists present agreed unanimously that fluoridation be endorsed as a worthy preventive of tooth decay in children.

At the annual meeting of the **Peterborough and District Dental Society**, the following officers were elected for the coming year: President, Dr. E. C. McKee; Vice-president, Dr. Allan McDougall; Secretary-Treasurer, Dr. R. H. Campbell.

At its final meeting of the season, the **Hamilton Dental Association** elected the following officers for the coming year: Dr. W. J. Hambley, president; Dr. G. M. Morrow, vice-president; Dr. J. F. Kilgour, secretary; Dr. W. H. Feasby, treasurer; and Dr. Lenard Easter and Dr. Ross Finlayson, directors.

At the annual meeting of the **Grey-Bruce-Dufferin Dental Society**, Dr. E. J. Weller of Mildmay was elected president. Other officers elected were: Dr. E. L. Martin, Owen Sound, vice president; Dr. E. W. Sadler, Owen Sound, secretary-treasurer; Drs. M. P. Hawton, G. Stewart, R. Blackwell, and H. Zinn, directors.

The Alumni Association of the University of Toronto does not exist for itself. Its purposes are predicated on the fact that it is an organization of the University and is intended to (1) keep the Alumni informed of the state of their University; (2) encourage interest of the Alumni in their University; (3) seek financial support from the Alumni for its own work and improve relationships in teaching, research and student assistance.

The Dental Alumni Association has perhaps one of the largest voluntary memberships in organized dentistry and at present there are over 800 members. Nearly one-third of the degrees granted throughout the University of Toronto have been conferred since 1945, and the cooperation of this group to their Alma Mater is most essential.

The Dental Alumni Association has re-

presentatives in most of the 38 Ontario Dental Societies, as well as many of the dental organizations throughout Canada, and this forms the nucleus of a very strong Alumni organization.

Through your membership you are given the opportunity to share in scholarships to pre-dental students and our greatest joy comes from giving to some worthwhile cause or someone in need. It is the desire of your Executive that each graduate should be a shareholder and as such a modest payment entitles you to these privileges. Your membership fee of \$5.00 may be paid to your local Society representative, or if you prefer it can be mailed directly to the Dental Alumni Association, 45 St. George Street, Toronto.

—J. E. T.

General News

The safety and effectiveness of fluoridation were documented before a Congressional committee recently. On May 25, 26 and 27, hearings on the Wier bill (HR 2341), which seeks to ban fluoridation throughout the United States, were conducted at Washington, D.C., by the Interstate and Foreign Commerce Committee. Following the hearings, several of the committee members predicted that the bill would not be reported out but would be permitted to die in committee.

Witnesses opposing the bill and supporting fluoridation included representatives of the country's leading professional organizations and agencies. Three organized groups were represented on the roster of the anti-fluoridationists: the National Committee Against Fluoridation, the Massachusetts Women's Political Club and the Christian Science Church.

Leo Spira, M.D., New York, N.Y., who did not identify himself with any of the three groups, said he came to this country from England in November 1951 "to help in the fight against fluoridation." He charged that fluorine is a nerve-poison, causes boils, weals, athlete's foot, eczema, brittle nails, pronounced baldness at an early age, "feminized males," fits of depression and melancholia, a feeling of apprehension and irritability, neuralgia, constipation, mental illness. Similar testimony was offered by other fluoridation opponents.

Many of the anti-fluoridationists carried

jugs of drinking water purported not to be from the Washington, D.C., supply which is fluoridated.

Fluoridation proponents included Rep. Ford (R., Mich.) of Grand Rapids; Rep. Long (D., La.); Sen. Hunt (D., Wyo.); Dr. H. Trendley Dean of Chicago, secretary, Council on Dental Research, American Dental Association; Dr. J. Roy Doty of Chicago, secretary, A.D.A. Council on Dental Therapeutics; Dr. E. Harold Gale of Albany, N. Y., chairman, A.D.A., Council on Legislation; Dr. John W. Knutson of Washington, D.C., chief dental officer, U. S. Public Health Service; Dr. Nicholas C. Leone of Washington, D. C., chief of medical investigations at the National Institute of Dental Research; Dr. Isadore Zipkin of Washington, D. C., senior scientist, N.I.D.R.; Major Robert W. Hobson of Washington, D. C., representing the Department of Defense; Dr. Francis F. Heyroth of Cincinnati, assistant director and associate professor of industrial toxicology, Kettering Institute of the College of Medicine, University of Cincinnati, representing the American Public Health Association; Dr. John D. Porterfeld, of Columbus, Ohio, Ohio state health commissioner and vice president of the Association of State and Territorial Health Officers; Dr. Wallace D. Armstrong of Minneapolis, professor and head of the department of physiological chemistry in the Medical School of the University of Minnesota; Mr. William Leslie Harris, superintendent of the water department at Grand Rapids; Mr. George W. Welsh, city manager of Grand Rapids, and Mr. David Auld of Washington, D. C., a director of the American Water Works Association.

In Memoriam

John Franklin Ross—Dr. John F. Ross passed away in Toronto on July 3rd, 1954, at the age of 84.

Born in Prince Albert, Ontario, in 1870, he received his early education at Port Perry, Ontario, and was graduated from the R.C.D.S. Ontario in 1895. Dr. Ross practised in Toronto for many years and retired in 1943. For several years he was on the teaching staff of the R.C.D.S., giving instruction in ceramics.

Dr. Ross was a member of St. Simon's Anglican Church, the Royal Canadian Yacht Club, and the Victoria Curling Club.

Surviving are his son, J. D. F. Ross, Q.C., his brother, Charles A. Ross, and two grandchildren. Mrs. Ross predeceased her husband several years ago.

Andrew Willard Taylor—Dr. Andrew Willard Taylor of Yarmouth, N.S., passed away suddenly on May 29th, 1954. He was 57.

Born in Fredericton, P.E.I., Dr. Taylor moved with his parents to Yarmouth at an early age. He was educated at Acadia University, and graduated from the University of Toronto, following which he returned to Yarmouth where he practised until his recent illness.

Dr. Taylor was a prominent member of Zion Baptist Church; a member of the

Scotia Lodge, A.F. and A.M., a first war veteran, and a member of the Yarmouth Golf and Country Club. As a member of the Canadian Dental Association and the Nova Scotia Dental Association, he served on various committees at different times.

Surviving are his wife, Nellie Irene; one son, Dr. Holden Frederick of Halifax; and one brother, John C. Taylor, of Cape Cod, Mass.

Percy Lewis Day—Dr. Percy Lewis Day of Harrowsmith, Ontario, passed away on May 3, 1954, at the age of 76.

Born in Harrowsmith, Dr. Day received his early education at Sydenham High School. In 1902 he graduated from the University of Michigan, and then practised in Indiana and Michigan for several years. In 1917 he returned to Harrowsmith, where he practised until retiring in 1943.

Dr. Day was a member of the United Church, and from 1930-40 was secretary-treasurer of the Portland Cemetery Board. He was for many years treasurer of the Albion Lodge, A.F. and A.M., of which he was recently made a life member.

Surviving are his wife, the former Constance Poulter; and three sons, Lewis of St. Andrews, N.B.; Kenneth, of Harrowsmith; and Alfred of London, Ont.

EASTERN ONTARIO DENTAL ASSOCIATION

Convention Programme

SEPTEMBER 19th, 20th, 21st

LaSalle Hotel, Kingston, Ontario

Sunday, Sept. 19th, 1954.

Golf, Fishing, Baseball at Penitentiary.
Dr. Johns' Greek pictures.

Monday, Sept. 20th.

Registration. Exhibits.
Dr. J. Stalzenberg, New York—Hypnosis in Dentistry.
Table Clinics.
Luncheon.
Dr. J. Hayward, Ann Arbor, Michigan—
Avoiding Complications in Minor Oral Surgery.

Dr. N. B. Sproul—Operative Dentistry.
Dinner Dance at the Golf Club.

Tuesday, Sept. 21st.

R.C.D.C.—Bridge Attachments.
Dr. J. Hayward—Biopsy in Oral Diagnosis.
Business Meeting.
Exhibits.
R.C.D.C.—Lesions of Oral Structures.
Dental Public Health Panel Discussion—
Moderator: Dr. Wesley Dunn.
Stag Dinner.

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1954	St. Andrews by the Sea, N.B.	September 5th-8th
1955	Toronto, Ontario	May 15th-18th
1956	Banff, Alberta	June 3rd-6th

Future Events

Date	Function	Location	Officer	Address
Sept. 5-8	Canadian Dental Assoc. & New Brunswick Dental Soc. Convention	St. Andrews by the Sea	Dr. S. K. Wetmore	146 Germain St., Saint John, N.B.
Sept. 18	Convention of Northern Ontario Dent. Association	North Bay	Dr. W. L. Boland	355 Ferguson St., North Bay, Ontario
Sept. 19-20-21	Eastern Ontario Dental Association Convention	Kingston	Dr. M. M. Derrick	Suite 105, 183 Metcalfe St., Ottawa, Ont.
Oct. 15	Dental Alumni Annual Meeting	Toronto	Dr. Ben Gross	816 Bathurst St., Toronto.
Oct. 13-Nov. 4	Annual Meeting of American Institute of Dental Medicine	Palm Springs, Calif.	Miss Marion Lewis	2240 Channing Way, Berkeley 4, Calif.
Oct. 19-22	Montreal Dental Clubs' Annual Fall Clinic	Montreal	Dr. Bruce Ward	1414 Drummond St., Montreal, P.Q.
Nov. 5	Annual Meeting of Academy for Oral Rehabilitation of Handicapped Persons	Miami Beach, Fla.	Dr. Hugh Kopel	19933 Livernois Ave., Detroit, Mich.
Nov. 6	American Academy of Gold Foil Operators	Miami, Fla.	Dr. Gerald Stibbs	School of Dentistry, University of Washington, Seattle 5, Wash., U.S.A.
Nov. 6-7	American Academy of Implant Dentures	Miami Beach, Fla.	Dr. Wm. E. Barb	668 E. Maple Rd., Indianapolis, Indiana.
Dec. 5	Mid Annual Meeting of American Academy of Dental Medicine	New York City	Dr. William Greenhut	124 East 84th St., New York 28, N.Y.

Short Graduate Courses

Date	Course	Location	Address
Sept. 9-10	Biennial Fall Refresher Course	University of Alberta, Edmonton	Dr. H. A. Grimsrud, University of Alberta, Faculty of Dentistry, Edmonton, Alta.
Sept. 13-15	Anatomy as Applied to Dentistry	University of Toronto	The Dean, Faculty of Dentistry, University of Toronto, 230 College St., Toronto 2-B, Ont.
Sept. 20-Oct. 15	5-Day Postgraduate Courses	Ohio State University	Dr. H. B. G. Robinson, College of Dentistry, Ohio State University, Columbus, Ohio.
Nov. 29-Dec. 3	Dental Radiology	University of Toronto	The Dean, Faculty of Dentistry, University of Toronto, 230 College Street, Toronto 2-B, Ont.
Jan. 17-21 1955	Periodontics	as above	as above
Jan. 23-Feb. 6	Orthodontics	Temple University	Dr. Louis Herman, Director of Postgraduate Studies Temple University, Dental School, 3223 North Broad St., Philadelphia 40, Pa.
Jan. 26-27-28	Clinical Occlusion	as above	as above

Notices

New York University College of Dentistry announces a two-year full time postgraduate course in Periodontics and Oral Medicine in preparation for certification and teaching. For information write: Secretary, Postgraduate Division, New York College of Dentistry, 209 East 23rd St., New York 10, N.Y., U.S.A.

Journal

DE L'ASSOCIATION DENTAIRE CANADIENNE

Traitement des racines dentaires infectées par l'ionophorese*

par EDWARD J. ORTION, D.D.S., D.F.M.P., New York

Les infections dentaires et périapicales dentaires sont une menace réelle à la santé de l'individu, étant la cause d'une infection généralisée, dite focale.

Nombre de praticiens extraient des dents dont les pulpes sont infectées partiellement ou en totalité dans le but d'éviter la formation de foyers d'infection et cela malgré les mutilations qui en beaucoup de cas sont évitables.

Bon nombre de granulomes ou autres séquelles inflammatoires des infections pulpaires peuvent et doivent, à notre avis, être traitées sans faire appel à la chirurgie. L'ionophorèse résout ce problème très avantageusement par la pénétration des ions à travers les canaux dentaires et les régions périapicales infectées.

Cette pénétration ionique permet une médication profonde des canaux dentaires et des régions environnantes. Un ion, selon Faraday, est un atome électrisé de courant positif ou négatif, selon qu'il a

perdu ou gagné un électron périphérique. La migration à travers nos tissus d'ions radicaux du pôle négatif au positif, ou inversement, d'ions métal, du positif au négatif lorsque le courant électrique est établi, sera la base de notre travail.

Pourquoi, après tant d'années, ce traitement qui a donné les preuves a-t-il été abandonné par tant de praticiens?

La raison initiale est le temps nécessaire à l'application de l'ionophorèse et aussi l'élément douleur, qui a un peu effrayé la profession à cause de l'appréhension du malade.

La migration dans les tissus vivants, in vivo, des ions radicaux du pôle négatif allant vers le pôle positif, et inversement, les ions métalliques passant du positif au négatif dans un courant établi, va donc être le sujet de notre présentation.

Les critiques émises contre ce traitement seront facilement combattues, si nous faisons usage de l'ion OH préconisé par le Docteur Pierre Bernard, de Paris, au lieu des solutions iodées (Lugol ou Chlorure de zinc).

*Communication présentée au sixième congrès annuel de la Société dentaire de Montréal, à Ste-Marguerite, le 9 juin 1954

L'électrode négative est donc placée dans la chambre pulpaire de la dent malade, à l'entrée d'un canal, après avoir nettoyé la chambre pulpaire de tous les débris qui l'encombrent.

L'électrode positive se composant simplement d'un petit cylindre métallique sera donné au patient à tenir dans une de ses mains. Le chlorure de sodium de l'organisme, au moment où le courant sera établi, libérera son élément radical, le chlore, lequel s'empressera de s'acheminer vers le pôle positif, l'anode.

Simultanément, les ions positifs Na, la soude, s'en iront dans le sens opposé vers l'électrode négative et une phorèse sera donc établie dans les deux directions. Dans la vieille technique, où l'ion I^3 est employé sous forme de Lugol, le même processus avait lieu, car ces ions suivaient les ions CL lorsque ceux-ci émigraient vers l'apex de la dent. Tandis que cette technique excellente ne pouvait être critiquée que par sa lenteur, dans la technique du Docteur Bernard, l'électrode négative, toujours en contact dans la dent, reste placée dans le canal, et cette fois, sans substance médicamenteuse.

Ce courant, en formant des ions négatifs OH, fera que ceux-ci suivront les ions CL et s'achemineront vers le pôle positif. Les OH proviendront de l'eau contenue dans le canal radiculaire. H^2O est décomposé par l'électrolyse négative et devient $H+OH$. H, l'hydrogène, s'échappera sous forme de gaz, tandis que l'ion OH de qualité négative s'acheminera à travers le canal parce que, radical, il est attiré par le pôle positif. Résumons: Na attiré par le pôle négatif ira buter sur la cathode dans la chambre pulpaire, où il déchargera son courant positif, redeviendra tout simplement atome sous la forme d'un sel de soude métallique, lequel, au contact de l'humidité, (l'eau environnante) réagira en décomposant ce liquide et donnera la formule suivante: $H^2O+Na=Na\ OH+H$, qui, lui, sera libéré.

Nous avons maintenant de la soude caustique, NaOH, le gaz hydrogène résultant de l'électrolyse secondaire. D'autre part, l'ion CL progresse vers le pôle

positif suivi immédiatement de l'ion OH dérivé de l'eau présente. Simultanément, il y aura cataphorèse, c'est-à-dire, que, dans le courant allant à l'extérieur, il y aura une dissociation des matières albuminoïdes encore présentes qui seront régurgitées dans la mousse formée avec l'hydrogène entraînant les débris en dehors du canal. Les ions OH ont la qualité prédominante d'être très rapides dans leur course vers le pôle positif. Leur vitesse est 5 fois plus grande que celle des ions I^3 , préconisés antérieurement. Cette particularité rendra donc le traitement 5 fois plus court qu'avec l' I^3 et, au lieu d'une application de 15 minutes, nous pourrions en 5 minutes avoir donné un effet suffisamment pénétrant et bactéricide.

L'ion OH, ainsi que le dioxyde de soude et la potasse préconisés par Schreier, opère une désintégration des molécules albuminoïdes et les rend solubles. Nous avons donc une dissolution dans la matière organique du contenu du canal et, par cette électrochimie, l'ouverture des canaux.

L'ion OH va nous donner par sa pénétration rapide un gain de temps et, de plus, il est absolument inoffensif pour les tissus périapicaux. L'ion OH est bactéricide et bactériolyseur; c'est-à-dire, qu'il détruit par liquéfaction le contenu microbien du canal et de la partie sous-jacente.

Cataphorèse

Une mousse électrolitique se forme dans la cavité pulpaire. Cette mousse dérivant, comme nous l'avons dit, de la dissolution des matières albuminoïdes et leur rejet à l'extérieur par l'hydrogène naissant dans le canal, n'est pas toujours si considérable que l'on doive constater sa présence de visu. Cette électrosmose est appelée cataphorèse.

Si la mousse est abondante, il vaut mieux l'enlever avec une boulette de coton avant de continuer le traitement, prévenant ainsi des courts-circuits qui pourraient se produire dans la cavité pulpaire. Il est important de noter sur l'ionophorèse, que la cathode, électrode négative se trouvant d'abord à l'entrée du canal, augmente l'humidité du canal avec

le traitement. La résistance au courant décroît et, par conséquent, le courant augmente d'intensité. Si nous employons, au contraire, l'électrode positive, l'anode, dans le canal pour un traitement au cuivre ou au zinc, l'humidité du canal décroissant, fera que la densité du courant s'amointrira.

Il y a donc là un nouvel avantage à l'emploi du courant négatif du côté de la dent, puisqu'il a tendance à s'intensifier au fur et à mesure du traitement.

Or, dans l'emploi du courant renversé, qui a parfois ses indications, il faut se méfier que le courant ne cesse de passer jusqu'au bout de la racine à cause du désèchement. Le traitement par courant positif est indiqué seulement dans les cas d'alcalose, c'est-à-dire excès d'alcalinité où la pulpe est morte sans ouverture avec l'extérieur. Un traumatisme en est généralement la cause.

Dans l'emploi du courant positif à l'endroit de la dent, il faut employer une électrode de platine pour éviter l'oxydation du métal qui aurait lieu avec une électrode d'acier ou autre.

En revenant à notre traitement par l'ion OH, il est important de vous indiquer qu'une sonde lisse comme électrode doit être évitée. Nettoyez mécaniquement l'entrée du canal après avoir suffisamment ouvert celui-ci avec de l'eau. Puis employez comme cathode une sonde barbelée. Celle-ci donnera à l'expulsion des débris régurgités un passage entre les barbes.

L'introduction de la cathode devra être progressive dans le canal pour que la stérilisation commence au niveau de la chambre pulpaire et atteigne progressivement la région apicale.

Ionophorèse

Ce mode de stérilisation est le seul que nous connaissons qui permette une évaluation quantitative du traitement.

Devant mesurer le courant donné dans notre traitement, nous devons en connaître l'unité: le Coulomb. C'est la quantité transférée par un ampère en une seconde ou par un milliampère en mille secondes ou 16 minutes et demie. Il est donc clair qu'en ionophorèse dentaire un

coulomb correspondra à la libération ou à la formation de 0. milligramme 16 d'ion OH ou 10 milligrammes de solution de soude caustique à 4% (NaOH). En somme, un traitement de canal radiculaire basé sur les indications données demandera de 2 à 6 décicoulombs, c'est-à-dire 3, 3 à 10 milliampères minutes et, comme exemple, nous donnerons le suivant:

Une application avec 4 décicoulombs demande 3,3 milliampères pour 2 minutes.

0,6 décicoulombs équivaldront à 1 milliampère-minute				
2	"	"	"	3,3
4	"	"	"	6,6
6	"	"	"	10

Passage de l'Ionophorèse

Toute matière organique dans un canal radiculaire serait nécessairement un obstacle à la pénétration ordinaire d'un antiseptique. Bien au contraire, cette obstruction organique étant électrolytique sera pénétrée par l'ion OH et ce passage sera noté par le milliampèremètre dont le cadran se trouve sur l'appareil que vous emploierez. Dans un canal fin, la résistance est plus grande que dans un canal large. Il sera donc nécessaire d'employer un voltage plus grand pour obtenir une bonne pénétration (milli-ampère). Par conséquent, plus le canal est petit, plus rapide est le passage des ions. Dans tout canal accessoire, les ions passeront aussi bien que dans le canal principal. La quantité des ions circulant dans des canaux de grandeur différente sera à peu de chose près, pareille (selon les expériences de Kellner).

L'étude morphologique des canaux montre la multiplicité des apex, souvent prenant une forme arborescente que nous ne pourrions concevoir sans en avoir la preuve par l'expérience faite in vitro.

En dépit de ces formations, l'ionophorèse fait que le courant circule dans tous les canaux aussi petits soient-ils, et c'est là un point d'importance considérable en faveur de cette technique.

Il a été préconisé, bien à tort, de placer l'électrode positive aussi près de la dent à traiter que possible, c'est-à-dire sur la face. Il n'y a là aucun avantage. Vous pourrez placer l'anode à n'importe quel point: les

lois de la physique s'appliquant aux courants dérivés vous enseigneront qu'il n'en est rien. De plus, votre malade sera beaucoup plus tranquille si vous mettez l'anode dans sa main au lieu de l'appliquer à sa figure, ou sa tête; ce qui pourrait l'effrayer.

Tolérance du passage du courant

La tolérance du patient au courant varie d'une dent à l'autre à tel point que quelquefois seulement un dixième de milliampère est tout ce que le malade peut endurer. Dans ce cas, un peu de pulpe vivante reste dans le canal. Avant d'introduire la cathode à l'entrée du canal, faites une anesthésie tronculaire ou régionale et cet inconvénient est facilement obvié.

Cette hyperesthésie peut aussi se trouver lorsque vous aurez atteint l'apex d'une racine dont les tissus périapicaux sont parfaitement sains.

2, 3, ou 4, milliampères sont généralement la tolérance accordée par les lésions ordinaires. Là, où il y a mortification totale de la pulpe et une région apicale infectée d'importance, on peut monter jusqu'à 5 milliampères. Ces plafonds sont en somme déterminés par la densité du courant électrique. Dans un canal à passage restreint, la densité sera plus uniforme et plus grande, la vitesse des ions également augmentée et l'élément douleur sera d'autant plus considérable. Au delà du canal, il n'y a aucune restriction du passage du courant, car celui-ci se diffuse en toutes directions. Les ions décroissent de vitesse et la tolérance augmente proportionnellement.

Il est intéressant de noter que la zone de tolérance du patient montre peu de variance. Il y a seulement une légère fraction d'augmentation accordée et si on diminue le courant il y a disparition entière de sensibilité. Par ailleurs, la tolérance augmentera pendant l'application. Après 30 secondes, il faut essayer d'augmenter et continuer ainsi sans provoquer l'intolérance surtout avec le patient pusillanime.

Vous pouvez pendant 15 secondes, au début de l'application, faire du courant

diadynamique surimposé à l'ionophorèse pour augmenter la tolérance, puis reprendre le courant simple. Nous reparlerons du courant diadynamique plus tard dans cette présentation. Nous voulons bien faire remarquer que les traitements à l'ionophorèse sont définis dans leur quantité d'administration et la certitude qu'ils ont été bien distribués dans les tissus est entière. La totalisation de l'intégrateur en décicoulombs, vous assure que ce courant est passé à travers les tissus. Il est nettement indiqué d'employer la digne dans tous les cas où c'est possible pour éviter une diffusion qui pourrait s'établir par la gencive par suintement. D'ailleurs, la diffusion inordonnée du courant cause une accélération inusitée de celui-ci et le milliampèremètre en fait foi ainsi que les chatouillements inaccoutumés que le patient ressentira. Ceux d'entre vous qui auront employé autrefois, l'ionophorèse avec le Lugol ou le chlorure de zinc, vous rappellerez des épanchements de serum provenant de la région périapicale et venant vous gêner dans le canal pendant le traitement. Ce phénomène est dû à l'irritation des tissus périapicaux.

Dans le traitement avec les ions OH, cette occurrence sera observée que très rarement, là où il y a déjà un état inflammatoire des tissus. Le traitement OH fera au contraire, disparaître ces épanchements. Si, par hasard, vous n'aviez pas employé une sonde barbelée ou, si malgré cette précaution, il y avait un blocage des substances voulant s'échapper de la racine, vous pourriez avoir là une source d'irritation, puisqu'il y aura pression du mognon pulpaire à l'apex de la racine.

Il faut absolument que les débris organiques aient le champ libre de s'acheminer vers la chambre pulpaire.

Dans la technique de l'OH il est non seulement possible, mais recommandé d'obturer d'une façon permanente les canaux dentaires après la première et seule application du traitement. Nous allons arriver, tout à l'heure, à l'obturation des canaux ainsi que le docteur Pierre Bernard le préconise. Il est bien entendu qu'après avoir isolé la dent aussi parfaite-

ment que possible, ayant nettoyé la chambre pulpaire de tous les débris et avoir allésé légèrement l'entrée du canal, placez l'électrode à l'entrée du canal. Il est entendu que cette électrode devra pénétrer progressivement vers l'apex au fur et à mesure que le canal se sera légèrement ouvert à sa pénétration et qu'il faudra permettre aux débris organiques et à l'hydrogène de s'échapper vers la chambre pulpaire.

Si vous voulez faire un nettoyage opératoire et également obtenir un peu de pénétration là où un canal est extrêmement rétréci, vous pouvez employer la soude caustique NaOH à 0% ou n'importe quelle autre préparation alcaline. Evitez l'emploi des acides, car vous perdez ensuite un peu de temps en neutralisant ceux-ci pour que les ions OH passent. Autrement, il y aurait une phorèse du radical de l'acide qui prendrait place et irriterait temporairement le ligament périapical de la racine (acide chlorhydrique: $H \rightarrow + - CL \rightarrow -$).

Même un alcalin doit être évité, si possible, dans les canaux accessibles et son emploi devrait être limité là seulement où il n'y a aucune pénétration possible au début. Le lavage de la cavité pulpaire avec de l'eau simple et pure après les manoeuvres susindiquées est recommandé. Ensuite la chambre pulpaire doit être raisonnablement desséchée à la seringue à air chaud, pour éviter une perte de courant qui serait possible par les parois et l'extérieur de la dent.

Dans les canaux où la pénétration est possible seulement à l'entrée, le courant doit être donné graduellement d'abord pour opérer une ouverture de celui-ci par lyse progressive des albuminoïdes intégrés aux substances calcaires. S'il est impossible de détecter l'entrée du canal, il faudrait placer un coton imprégné d'une solution de NaOH (soude caustique) à 20% et y appuyer dans la chambre pulpaire, l'électrode négative au-dessus de cette boulette légèrement humide.

Vous pourrez ainsi par cette manoeuvre obtenir que le canal se révèle assez vite. Vous pourrez le détecter en explorant

avec une sonde lisse et fine pour en trouver l'entrée. Il est toujours entendu que le patient tiendra l'électrode positive dans sa main. Evitez des bagues sur la main qui tient l'électrode et évitez de donner beaucoup de courant. Au début, un peu donnera au patient plus de confiance et sa tolérance sera d'autant plus grande. Si vous avez accès au bout du canal même au début de l'application, n'y pénétrez pas. Allez-y tout doucement, comme il vous a été indiqué; une désinfection graduelle du canal sera donc obtenue au fur et à mesure de l'avance que vous y ferez. La mousse, que je vous ai signalée, ne sera pas nécessairement abondante ou même visible. S'il y a impression de chatouillement dans la gencive, ce sera dû à un court-circuit qui se sera formé sans que vous le sachiez. Il est évident qu'une obturation métallique devra être enlevée de la dent avant que le courant y soit fait usage. Indiquez bien au patient qu'il ne méprenne une sensation vibratoire qui, en somme, serait indicative à la limite extrême de sa tolérance. Qu'il ne confonde cette vibration avec le chatouillement provoqué par un court-circuit.

Analgesie produite par le courant diadynamique modulé

Lorsque vous voudrez produire une analgesie locale, vous l'obtiendrez d'une façon surprenante en mettant le courant diadynamique modulé dont vous trouverez la computation sur le cadran droit de votre appareil d'ionophorèse. Il faudra ramener le milliampérage aussi bas que possible (un demi-milli), car il y aura à chaque pénétration du courant diadynamique un léger ressaut qui sera d'autant plus marqué que vous aurez élevé le courant initial, c'est-à-dire visible sur le cadran gauche de votre appareil.

Si votre appareil d'ionophorèse le permet, le courant secondaire diadynamique sera réglé automatiquement à une seconde avec un intervalle d'une autre seconde et répété ainsi pendant une demi à une minute, car le résultat est déjà très suffisant. Si l'on continuait plus d'une minute, vous causeriez une irritation temporaire. Toutefois, il faut bien qu'on

entende que le courant diadynamique est un courant galvanique qui augmente d'intensité, puis redescend à zéro et puis reprend d'une façon mesurée et que vous réglez, sur votre cadran de droite selon la tolérance du patient. Ce courant modulé, intermittent, au bout du temps très court de son emploi aura donné la possibilité de rétablir et augmenter le courant en plateau que vous réglez du côté gauche de votre appareil. Ainsi qu'il vous a été dit précédemment la présence d'un minime fragment de pulpe vivante suffit à rendre l'intolérance marquée et vous pouvez la vaincre de la sorte, et éviter l'injection locale ou régionale anesthésique. Ne jamais donner au moment de l'anesthésie, plus de 5 milliam-pères minutes de courant, toujours dans le but d'éviter une irritation du ligament. L'unité de courant que nous emploierons est le décicoulomb, que nous avons décrit. Nous allons donner ici la quantité nécessaire dans les cas qui nous intéressent. D'abord, il est absolument indiqué de ne donner le traitement que dans une racine à la fois, même dans les dents multiradiculées. La raison est que si vous faites passer le courant dans deux canaux ou trois en même temps, il se peut très bien que l'un des canaux absorbe beaucoup plus que les autres et vous n'aurez donc plus de base pour le dosage du courant dans chaque canal. En principe, un canal accessible ne demande que 2 décicoulombs; un canal inaccessible, 4 décicoulombs; et où la lésion périapicale est assez considérable, il vaut mieux donner 6 décicoulombs pour bien imprégner les tissus d'ions OH.

Variations d'intensité de courant Cas possibles

1.—Votre courant diminue d'intensité sans cause apparente. La cathode est généralement trop poussée dans le canal et, par expansion causée par la lyse opérante, il y a refoulement de mognon pulpaire au bout du canal, causant douleur par pression. Il suffit de ramener un peu l'électrode.

2.—Le courant augmente progressive-ment d'intensité sans raison apparente.

C'est absolument normal, si le canal qui, au début, était deshydraté, commence à s'imprégner d'humidité et fait, par électroosmose, une cataphorèse. C'est ainsi que le canal devenant plus pénétrable et l'électrode descendant dans le canal réduit la longueur de passage de courant.

3.—Le courant *augmente beaucoup* et sans raison apparente. Il doit y avoir eu dérivation de courant par contact avec la lèvre, la joue, la langue ou une obturation métallique dans la dent. Dans ce cas, enveloppez d'un tube fin de caoutchouc votre électrode pour ne laisser dépasser que le bout qui entre dans le canal. Il se peut aussi que la mousse électrolytique se soit formée en abondance et qu'elle ait causé par contact avec la bouche une diffusion de courant. Vous n'avez qu'à amener à zéro le milliampèremètre, tout nettoyer et recommencer.

4.—Dans les racines multiradiculées, une augmentation intempestive de courant peut signifier qu'une des autres racines se sera associée à électrolyse de la première par la présence d'humidité dans la chambre pulpaire et que la seconde racine est en train de prendre sa part de l'électrolyse. Il vaut mieux arrêter et essuyer.

Cas spéciaux

1.—La lésion apicale comprend deux foramens radiculaires dans deux dents différentes, quelquefois, ou deux racines différentes de la même dent.

2.—Le manque de tolérance au courant, dès le début, indique que la racine contient une pulpe encore vivante. Ici le blocage par anesthésie permettra l'enlèvement de ce fragment de pulpe et ensuite l'administration du traitement sans toutefois dépasser 5 milli. pour éviter de l'irritation postopératoire.

3.—Hypersensibilité dans la partie apicale de la dent avec une tolérance ne dépassant pas un milliampère. Ceci peut coïncider avec une région périapicale parfaitement saine avec une lésion de moindre importance. Encore une fois l'injection hypodermique est de rigueur.

4.—La perforation de la chambre pulpaire ou d'un canal est confirmée. La

diffusion du courant est presque totale. Continuez à donner votre courant et très légèrement pour environ 2 minutes; alors s'il est possible, bouchez votre perforation avec une préparation à l'oxyde de zinc et à l'eugenol qui devrait durcir dans le canal avant que vous ne continuiez votre traitement.

5.—*Ceci est très important.* Si vous avez donné un traitement médicamenteux dans la dent et en particulier avec du formol, il faut l'arrêter. La chambre pulpaire du canal doit être lavée et une obturation avec une huile essentielle quelconque, du Guaiacol, par exemple, peut être placée d'une façon lâche dans le canal, avec une obturation semi-obturante au Sandarac. Il y aura une diffusion des médicaments à travers ce pansement.

6.—Vous trouvez du pus se formant dans le canal. Il faut le drainer avec des pointes de papier stériles, le canal sera lavé à l'eau et drainé jusqu'à la seconde séance lorsque vous laverez à nouveau, à l'eau encore, et dessécherez avec des pointes de papier, et ensuite vous pourrez faire l'ionisation.

7.—Dans certaines fistules, on peut observer quelquefois une persistance du trajet fistulaire à l'extérieur des tissus mous et, par conséquent, un foyer secondaire. Ce foyer secondaire peut réinfecter la partie périapicale de la dent, même après traitement. Il y a deux moyens de guérison:

(a) Ionophorèse et ionisation. Une électrode de cuivre sera placée sur le courant positif avec un fil métallique bien isolé et découvert seulement dans son extrémité. Cette extrémité est introduite peu à peu dans la fistule. Le courant négatif est dans le canal de la dent; par conséquent la pénétration des ions OH dans le canal continuera à prendre place, mais l'électrode positive due à la présence de la pointe de cuivre s'ionisera et libérera des ions de cuivre vert qui pénétreront secondairement la fistule par le processus concomitant de renversement. La fistule est ainsi stérilisée dans toute sa longueur et sa cicatrisation est rapide.

(b) Un instrument cassé est dans le

canal. Il est fort probable qu'une sonde barbelée aura laissé un léger passage, même infime, le long de ses surfaces barbelées. Vous pourrez faire votre traitement d'ionophorèse comme d'ordinaire; les ions OH passeront à travers l'instrument et auront une tendance à le relâcher d'avec les murs de la racine par lyse des matières albuminoïdes alentour. Dans certains cas, ce ramollissement des parois rendra l'extirpation de l'instrument cassé, possible.

8.—Un pivot est cassé dans le canal. Il doit être enlevé avant que le traitement d'ionophorèse soit appliqué. Ceci est également vrai d'un ciment qui serait un handicap absolu, car le ciment n'est pas traversé par le courant électrique. Après l'enlèvement du corps étranger, le traitement est fort possible. Cela s'applique aussi dans les cas où il y a une formation de dentine secondaire qui se manifeste dans toute la longueur du canal. Le courant ne passera qu'après un léger forage dans la direction du canal et une application assez longue d'ionophorèse.

Obturation expansive du canal

Emploi du calcium dioxyde (Ca OH) dans l'obturation des canaux, préconisé par le docteur Bernard.

Nous voulons maintenant boucher un canal. Le matériel doit avoir comme qualité d'être non-irritant et facilement employé pour obtenir une régénération rapide des tissus périapicaux. Les pointes absorbantes sont employées d'abord pour drainer toute humidité qui pourrait encore être présente dans le canal. Il est évident que les pointes devront être stériles ainsi que tout instrument employé dans les traitements des canaux. J'aimerais ici dire un mot concernant l'emploi de l'autoclave. C'est le moyen le plus sûr de désinfection absolue de l'instrumentation et du matériel dont on fait usage. Toutefois, la stérilisation sèche peut être substituée.

Ne jamais faire usage de formol ou autres irritants chimiques à cause des particules de ceux-ci qui causeront une inflammation certaine. L'obturation des canaux par le moyen que nous allons

décrire, est d'application relativement récente.

La substance obturatrice se compose d'oxyde de calcium anhydre (CaOH) absolument dépourvu d'hydratation et on l'obtient dans des ampoules de verre qui sont hermétiquement fermées. Dans un petit flacon à compte-gouttes et qui ferme hermétiquement aussi, se trouve un liquide se composant de 75 parties d'alcool éthylique et 25 de glycérine, les deux complètement anhydres dans la proportion de 99%. La poudre contient 20 grammes d'iodure de calcium pour 100 grammes d'oxyde de calcium anhydre, ce qui rend possible une opacité relative. Cette formule a été préparée en France sous le nom de Radiocalex et Ocalex. Vous pourriez l'obtenir au Canada et je vous conseille beaucoup d'employer les préparations qui vous sont envoyées, car si vous voulez les préparer vous-mêmes, il y a des difficultés techniques qui rendront votre tâche beaucoup trop difficile.

La chose qui importe, est que l'oxyde de calcium anhydre augmente dans la proportion de 2 fois et $\frac{1}{2}$ son volume initial lorsqu'il y est ajouté de l'eau. Il se forme à ce moment du calcium hydroxide, c'est-à-dire $\text{OCa} + \text{H}^2\text{O} = \text{Ca}(\text{OH})_2$.

La pénétration dans les canaux et les accessoires de ceux-ci est si totale que l'expérience in vitro révèle la présence de canaux dont on n'aurait jamais soupçonné la présence, car ceux-ci sont pénétrés d'une façon absolue par cette pâte, attirée par la légère humidité des canaux. Vous mélangez votre poudre dans votre pâte sur une plaque stérile et à l'état de crème épaisse l'introduisez dans la dent. Vous pouvez en faciliter la pénétration dans les canaux en y employant un Lentulo qui, par ses vibrations et sa forme en spirale, poussera la pâte en faisant office d'agitateur. Les qualités hydrophiles de cette pâte font qu'elle s'insinue dans les canaux les plus fins. Au bout de quarante-huit heures, il est bon de réouvrir la cavité pulpaire et de procéder à un bouchage aux pointes de gutta causant ainsi, avant le durcissement de

l'hydroxyde de calcium, un tassement général.

Il ne faut jamais conserver le contenu d'un tube de poudre déjà ouvert d'un jour à l'autre, car l'humidité de l'air s'y infiltre et le rend inutilisable. Par incorporation de la pâte à l'eau des canaux, se forme un gel $\text{Ca}(\text{OH})_2$ calcium hydroxide *insoluble* et c'est là une qualité très importante à noter. Car une fois que votre pâte a subi son expansion maxima, elle restera sous sa forme acquise par l'absorption de la molécule d'eau H dans sa masse. L'humidité, venant ou des apex ou de la chambre pulpaire, s'il devait s'y en trouver, n'aurait plus possibilité d'envahir le canal ainsi bouché.

Diadynamothérapie

Je vous donnerai comme indications utiles à connaître que les ions OH élèvent le pH dans les régions périapicales jusqu'à 8 ou 9, phénomène particulièrement utile dans la régénération des tissus, par exaltation leucocytaire. Le pH élevé est un catalytique des phosphates et un inhibiteur microbien. Le diadynamothérapie est un courant diphasé de basse fréquence que nous emploierons comme analgésique.

Nous avons décrit l'emploi, tout à l'heure, comme tel dans les cas de traumatisme d'oedème consécutif à un état inflammatoire et infectieux son emploi est précieux. Ici, nous le préconisons dans l'accélération de la régénération de la structure osseuse dans les régions apicales traitées par l'ion OH. La diadynamothérapie est basée sur un type de courant modulé et de courte durée et de basse fréquence.

Nous stimulerons par son emploi les tissus devenus atones et combattons les états trophiques en déficience. Les traitements devront être de très courte durée, une ou deux minutes par séance, toutes les 48 heures et pas plus de trois ou quatre fois. L'intensité de courant sera limitée du seuil de perception à celui de la douleur. Une vibration assez marquée est provoquée mais sans devenir douloureuse pour le patient.

Il est donc utile de trouver la tolérance de chaque individu dont la coopération est précieuse.

Le courant galvanique nous a donné par l'ionophorèse les qualités curatives due à l'ion OH. La basse fréquence modulée de la diadynamothérapie stimule le métabolisme et la guérison des tissus régénérés. Comme preuve indéniable, comparez des radios postopératoires à celles prises 4 mois plus tard, vous aurez des recalcifications aussi denses que celles prises ordinairement après une année.

Technique

Deux petites capsules de 2 centimètres de diamètre formant électrodes, sont

placées en dehors et en dedans de la région à soigner. Si votre appareil possède la diadynamothérapie, il suffira de mettre automatiquement le courant modulé avec intervalles d'une seconde pour obtenir l'analgésie et les traitements eutropiques.

Si vous n'avez que l'appareil usuel pour traitements galvaniques, il vous est possible de faire une manipulation manuelle réglée pour donner l'impression maxima de vibration sans douleur et un minima au dessous du seuil perception. Vous alternerez les hauts et bas à la cadence d'une seconde chaque, pendant une durée totale d'environ une minute.

1 East 57th Street.

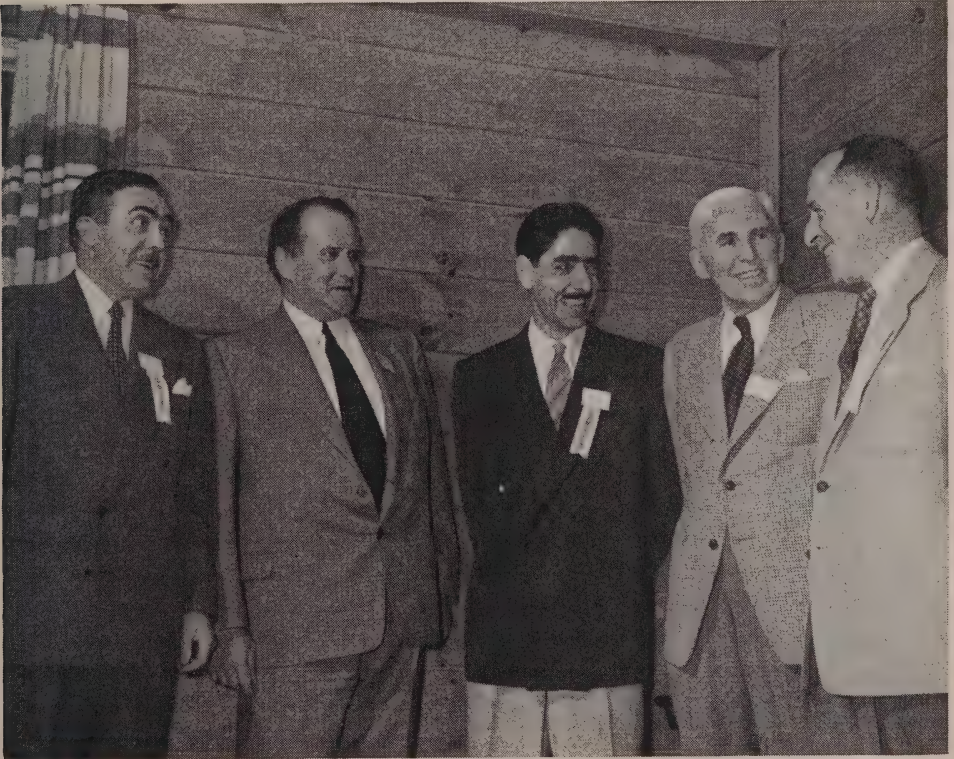


Photo prise à l'ouverture du sixième congrès annuel de la Société dentaire de Montréal, qui eut lieu les 6, 7 et 8 juin dernier au Alpine Inn, à Ste-Marguerite, Co. Terrebonne. De gauche à droite: les docteurs Victorien Dubé, vice-président du Collège des Chirurgiens-Dentistes de la Province de Québec et représentant officiel de cet organisme; Gustave Ratté, président-portant-de-charge de l'Association dentaire canadienne et son représentant; Antoine Raymond, président de la Société dentaire de Montréal; Ernest Charron, doyen de la faculté de chirurgie dentaire de l'Université de Montréal; Louis Lépine, directeur du Congrès.

Congrès de l'Association dentaire canadienne et de la Société dentaire du Nouveau-Brunswick à St-André-sur-mer les 5, 6, 7 et 8 septembre 1954 Programme scientifique

lundi, le 6 septembre

Cliniques de table

Dr Herman Maurice Waugh, D.D.S., ancien chef de service du département d'orthodontie de l'Université Columbia: "Conférence du Mémorial George Grieve".

Dr Philip William, D.M.D., assistant-professeur de couronnes et ponts, Tufts College Dental School, Boston: "Récents progrès en couronnes et ponts".

Dr M. G. Boyes, D.D.S., Université de Toronto: "Pédodontie".

Dr K. L. Longway, D.D.S., Marine des Etats-Unis: "Dentisterie opératoire".

mardi, le 7 septembre

Dr A. H. Crowson, D.D.S., Ottawa: "Dentiers immédiats".

Dr J. J. McCarthy, D.D.S., Université McGill: "Chirurgie buccale".

Dr D. W. Gullett, secrétaire de l'A. D. C.: "Enquête économique au sein de la profession dentaire canadienne".

Dr John H. Barr, D.M.D., professeur de diagnostic et de radiologie du Tufts College Dental School: "Etude clinique de pathologie de 5,000 patients".

mercredi, le 8 septembre

Major H. W. Hart, C.R.D.C., Ottawa: "Prothèse complète".

Dr J. S. Bagnall, D.D.S., Université de Dalhousie, Halifax: "Notions de pédagogie dentaire".

Dr S. Holmes, D.D.S., Marine des Etats-Unis: "La périodontie à ses débuts".

Programme des activités sociales

dimanche, le 5 septembre

Concert.

lundi, le 6 septembre

Déjeuner

Diner annuel de l'A. D. C.

Danse au casino

mardi, le 7 septembre

Déjeuner

Diner du président et danse

conférencier: Lt-Gouverneur, D. L. McLaren.

mercredi, le 8 septembre

Déjeuner; distribution des trophées de golf.

Programme des dames

lundi, le 5 septembre

Concert

mardi, le 6 septembre

Sherry

Tournoi de golf

Thé au "Clibrig", résidence de l'Honorable

Cairine Wilson.

Danse au casino.

mardi, le 7 septembre

Café au Katy's Cove

Bridge et thé

Diner et danse du Président

mercredi, le 8 septembre

Café sur la terrasse

Les chèques ou mandats au montant de \$15.00 pour défrayer l'enregistrement doivent être faits payables à la Société dentaire du Nouveau-Brunswick et expédiés au docteur S. K. Wetmore, secrétaire du Comité du Congrès, 147 Germain, St-Jean, N.-B. en même temps qu'une demande pour des chambres.

Nouvelles de l'Association

Honneur conféré au Président de l'A. D. C.

Au cours de la collation des grades de l'Université St-Joseph de Moncton, N.B., tenue le 25 mai dernier, le docteur A. J. Coughlan a reçu un doctorat honoraire en sciences.

Fluoruration et mortalité

La livraison de mai des U. S. Public Health Reports renfermait les résultats d'une enquête entreprise, par paires dans 32 villes américaines dont l'eau est fluorurée et dans 32 villes dont l'eau ne l'est pas, sur les causes de la mortalité de leurs habitants. Cette enquête portait sur un total de 892,625 personnes dans les premières villes et sur un total de 1,295,000 dans l'autre cas. On a classé comme ville dont l'eau était fluorurée, quand l'eau contenait 0.70 p.p.m. ou plus de fluor, tandis qu'on classe comme ville dont l'eau n'est pas fluorurée, quand l'eau contenait 0.25 p.p.m. ou moins.

Le taux moyen de la mortalité est de 1,005.0 par 100,000 de population dans les villes dont l'eau n'est pas fluorurée et de 1,010.6 pour les autres. Dans 16 villes prises par paires, le taux est plus élevé pour celles dont l'eau ne contient pas de fluor, tandis que dans 16 autres cas, on constate le contraire. Il n'y a pas de différence notable pour le taux des mortalités dans les deux catégories de villes. Les différences prennent un certain sens quand on les compare entre les villes prises deux à deux.

Pour les besoins statistiques, on a observé les taux des décès pour cinq maladies données: maladie de coeur, cancer, lésions intra-craniennes, néphrites, cirrhose du foie. Les résultats de l'enquête ne révèlent pas de différences notables entre les deux catégories de villes.

Dans les villes dont l'eau n'est pas fluorurée, le taux de mortalité pour les maladies de coeur est de 357.4 par 100,000 de population, tandis que dans les autres villes le taux est de 354.8. Dans 17 villes, prises deux à deux, le taux est plus élevé dans les villes dont l'eau n'est pas fluorurée; dans les 15 autres paires, c'est le contraire. Dans les villes dont l'eau n'est pas fluorurée, le taux des décès causés par le cancer est de 139.1 par 100,000 de population, tandis qu'il est de 135.4 dans les autres villes. Dans la moitié des 32 villes, prises deux à deux, le taux est plus bas dans les villes dont l'eau est fluorurée.

Les lésions intra-crâniennes, causent une proportion de 104.8 par 100,000 des décès dans les villes dont l'eau n'est pas fluorurée et 111.5, dans les autres villes; comparées par paires, 13 des 32 villes indiquent un taux plus élevé quand l'eau n'est pas fluorurée.

Dans les villes dont l'eau n'est pas fluorurée les mortalités causées par les néphrites donnent des taux de 26.7 par 100,000 et dans les autres villes, 21.9; dans 19 villes, prises deux à deux, les taux sont plus élevés dans les villes dont l'eau ne contient pas de fluor.

Dans les villes dont l'eau n'est pas fluorurée, la cirrhose du foie donne des taux de mortalité de 8.2 par 100,000; dans l'autre cas, 6.6; comparées par paires, les villes dont l'eau ne contient pas de fluor donnent un pourcentage plus élevé dans 17 cas.

Résumé:

1) Ce rapport étudie une analyse des taux de mortalité en général et pour cinq causes spécifiques — maladies du coeur, lésions intra-crâniennes, néphrites et cirrhose du foie — dans 65 villes de 16 Etats différents. Ces taux sont comparés entre les villes dont la teneur en fluor de l'eau est de 0.25 p.p.m. ou moins et celles dont la teneur est de 0.70 p.p.m. ou plus.

2) Les statistiques n'indiquent pas de différence notable dans les taux de mortalité de ces deux catégories de villes, soit pour les causes générales ou pour les causes spécifiques — maladies de coeur, cancer, lésions intra-crâniennes, néphrites ou cirrhose du foie.

Renseignements révélateurs (tirés du Hansard du 13 mai 1954)

Compte-rendu de la journée:

M. Stanley Knowles (Winnipeg nord-centre): "M. le président, puis-je poser une question au Ministre de la Santé nationale et du Bien-Etre social? En rapport avec la décision qui a été prise ces jours derniers par l'Association médicale d'Ontario d'augmenter les honoraires des médecins, le gouvernement se décidera-t-il à accélérer la préparation de sa loi sur l'assurance-santé pour tout le pays, en laissant les provinces contribuer à ce plan dans la mesure de leur choix?"

Hon. Paul Martin (Ministre de la Santé Nationale et du Bien-Etre social): "M. le président, mon collègue sait fort bien que le gouvernement se préoccupe toujours de ces problèmes." M. Knowles: "Puis-je ajouter une autre question? Le Dr G. E. Wride exposait-il l'opinion du gouvernement, il y a deux ou trois jours, quand il déclarait que l'assurance-santé restait toujours une question à l'étude par le gouvernement?"

M. Martin: "Je ne suis pas sans connaître les paroles du Dr Wride. Les seules personnes qui peuvent parler au nom du gouvernement sont les membres du parlement."

Plan d'assurance pour les traitements dentaires

Le premier plan connu d'assurance dentaire vient d'être inauguré à New York le 19 mai dernier. Cette assurance est disponible aux individus par groupes de 40 ou plus seulement quand 75% d'une collectivité s'y est inscrite. Elle couvre aussi les dépendants immédiats. Avant d'être admis, les candidats doivent faire mettre leurs dents en ordre jusqu'à concurrence de \$150.00. Quand tout est en ordre, l'assurance paie les déboursés nécessaires pour l'entretien des dents pour les familles qui ont un revenu inférieur à \$5,000. Les patients peuvent faire traiter leurs dents dans le cabinet privé d'un dentiste de leur choix, à condition que ce dentiste adhère au plan. Tous les dentistes de la région métropolitaine de New York ont été invités à adhérer au plan. La prime annuelle pour une seule personne est de \$19.80, par année; \$39.80, pour un homme et son épouse; \$72.00, pour une famille. Les assurés qui gagnent plus de \$5,000 devront payer les honoraires ordinaires. Cependant la compagnie d'assurance paiera au dentiste les montants fixés par la police pour les divers traitements, abaissant d'autant les sommes que les assurés devraient payer. Les dentistes adhérant au plan recevront des honoraires dont la liste est fixée à l'avance pour les divers traitements.

Enquête économique

Quelques 30% des dentistes canadiens avaient retourné le questionnaire à la date ultime du 1er juin. Les renseignements que ces questionnaires renferment seront classifiés durant les mois d'été et les rapports seront préparés aussitôt que possible. L'Exécutif, à sa dernière assemblée, a décidé de confier ce travail à une firme spécialisée dans ce genre d'activités.

Nouvelle pellicule sur le cancer

L'Institut national du Cancer du Canada a offert à l'Association un film sonore en couleurs intitulé: "Le cancer buccal, son diagnostic précoce". Ce film peut être emprunté par les sociétés dentaires par l'entremise du service de la bibliothèque. Il faut s'adresser au: Bibliothécaire, Association dentaire canadienne, 234 rue St-Georges, Toronto.

Rapport sur le rendement d'une clinique-modèle dentaire industrielle

La division d'hygiène dentaire du Ministère de la Santé nationale et du Bien-Etre social vient de publier un rapport (mai 1954) sur une expérience qu'elle a tentée ces derniers temps. Comme le mentionne l'avant-propos de ce rapport, cette expérience représente le fruit d'échanges de vues avec le Comité de Dentisterie industrielle

de l'A. D. C. "Cette expérience fut tentée à la suite d'échanges de vues avec le Comité de Dentisterie industrielle de l'Association dentaire canadienne."

En 1946-1947, la division d'hygiène dentaire du Ministère de la Santé nationale et du Bien-Etre social et le Comité de Dentisterie industrielle ont collaboré à l'entreprise d'une enquête sur les services dentaires industriels du Canada et sur la réaction des industriels sur cette question. Les renseignements obtenus et leur analyse ont porté le Ministère à mettre sur pied et à faire fonctionner à titre d'essai, une clinique dentaire industrielle d'un caractère purement préventif à l'usage d'un groupe particulier d'employés du gouvernement, des deux sexes, travaillant à divers postes. Voici les conclusions du rapport:

- 1) Les services dentaires industriels prennent le même caractère préventif que celui des services industriels de santé générale.
- 2) Un service de caractère préventif peut toucher un grand nombre de travailleurs et donner d'excellents résultats au point de vue sanitaire.
- 3) Un tel service a de multiples occasions de collaborer avec les services industriels de santé générale et avec les dentistes en clientèle privée; des relations profitables aux deux partis en cause peuvent s'établir, si on fait bien comprendre aux dentistes concernés le fonctionnement et les buts de l'entreprise.
- 4) Les employés manuels et les employés de bureau verront d'un bon oeil et utiliseront les services d'une organisation préventive semblable; mais le progrès et l'essor d'une telle clinique ne dépendent pas tellement du dynamisme et du doigté du dentiste en charge comme de la collaboration et de l'intérêt des dirigeants de l'industrie à toutes les échelons et de la bonne volonté des dentistes pratiquant dans la même localité.
- 5) Pour faire ses frais, il faut qu'une clinique du genre soit constamment occupée et qu'elle donne un bon rendement, comme tous les autres départements d'une industrie, par ailleurs.
- 6) Le dentiste industriel doit posséder certaines qualités. Il doit s'intéresser d'abord à la dentisterie préventive. Il doit être un bon diagnosticien, un bon radiologiste et un conseiller fiable en matière de santé. Les rapports qu'il est appelé à avoir avec les médecins industriels doivent le porter à se renseigner sur leur domaine et d'autres sciences connexes. Il doit posséder la confiance des membres de la profession

dentaire de cette localité.

- 7) Si l'agglomération est d'un nombre tel que les services d'un dentiste seul ne sont pas suffisants, on devra lui adjoindre une hygiéniste dentaire de préférence à un ou plusieurs autres dentistes. Cette hygiéniste devrait être bonne conseillère et apte à donner des services prophylactiques.
- 8) Quoiqu'une telle clinique soit appelée à avoir des rapports étroits avec le service industriel de santé générale, elle ne doit cependant pas être subordonnée à ce service, devenant une sous-section sous la direction du directeur médical; elle doit fonctionner comme une entité distincte en rapport constant avec le service médical, mais elle doit être responsable vis-à-vis les administrateurs de l'industrie. Cette situation est d'ailleurs celle qui existe dans les universités, où les facultés médicale et dentaire vivent côte à côte en échangeant des relations des plus cordiales; de plus, en clientèle privée, la chose se fait de même à la satisfaction de tous les intéressés.

On demande une livraison du Journal

La livraison de février 1954 du Journal de l'Association dentaire canadienne se fait rare au secrétariat de l'A. D. C. Ceux qui peuvent en disposer feraient bien d'en envoyer des copies au secrétariat le plus tôt possible et ils en seront vivement remerciés.

Acquisitions récentes de la bibliothèque

- ANDERSON, W. A. D. Pathology. 2nd ed. 1953. 1393p. illus.
- BRASIER, S. Maxillo-facial laboratory technique and facial prostheses. 1954. 232p. illus.
- BUNTING, R. W. Oral hygiene. 2nd ed. 1954. 283p. illus.
- COMROE, B. I.; COLLINS, L. H., and CRANE, M. P. Internal medicine in dental practice. 4th ed. 1954. 563p. illus.
- GINSBERG, E. L. Public Health is people. 1950. 241p.
- GREEP, R. Histology. 1954. 953p. illus.
- LONGSBERG, P. Changes in the size of the lower jaw on account of age and loss of teeth. 1951. 90p. illus.
- MUSTARD, R. S. An introduction to public health. 3rd ed. 1953. 315p.
- NATIONAL RETAIL CREDIT ASSOCIATION. Physicians and dentists credit and collection manual. 1953. 55p. illus.
- MCNEIL, C. K. Oral and facial deformity. 1st ed. 1954. 127p. illus.
- PRATT, R. Antibiotics. 2nd ed. 1953. 398p. illus.
- RHYNE, C. S., and MULLIN, E. F. Fluoridation of municipal water supply — a review of the scientific and legal aspects. 1952. 62p.
- SCOTT, M. L. School feeding: Its contribution to child nutrition. FAO Nutritional Studies No. 1953. 129p. illus.
- TYDINGS, K. S. A guide to medical and dental photography. 1953. 124p. illus.

Nouvelles des Sociétés dentaires de la province de Québec

Société dentaire de Montréal

La Société dentaire de Montréal vient de procéder à l'élection de son nouveau conseil d'administration pour l'année 1954-1955.

Le Dr Léon Carpentier a été élu à la présidence. Les autres membres de l'exécutif sont: Les Drs Roland Gendron, premier vice-président, Vincent Tremblay, 2ème vice-président, Antoine Raymond, conseiller spécial, Gilles Baril, secrétaire, Jean Migneault, secrétaire-adjoint, Florent Terriault, trésorier, Fernand Lalonde, bibliothécaire, Gaston Lajoie, délégué au Collège des Chirurgiens-Dentistes de la province de Québec.

Les Drs Louis Lépine, Guy Lefrançois, D. Gratton et J.-P. Lemieux agiront comme conseillers.

Société de Stomatologie de Québec

A sa dernière réunion de l'année académique tenue le 3 juin 1954, la Société de Stomatologie de Québec a élu ses officiers pour l'année 1954-1955.

Les officiers suivants furent élus à la direction de la société: Président: Léopold Dubé; vice-président: Louis Bernier; secrétaire: Jacques Dufour; secrétaire-publiciste: André Grenon. Le président sortant de charge était le docteur Gustave Lachance. Le docteur Louis Bernier fut aussi élu comme gouverneur du Collège des Chirurgiens-Dentistes de la province de Québec pour y représenter la Société de Stomatologie.

LE QUESTIONNAIRE DU PRATICIEN

COLORATION DES DENTS

Question V

Une de mes patientes qui a de fort jolies dents blanches, voit depuis quelques temps, ses deux incisives centrales se colorer assez fortement en brun. Elle ne fume pas. Ses dents sont vivantes, aucun nettoyage ne supprime cette coloration qui s'étend en laissant quelques plages blanches.

Quelle est la cause de ce phénomène et quel en est le traitement? (couronne Jaquette mise à part). Dr R. J. (Lyon)

Réponse:

Ce phénomène est moins rare qu'on ne le croit et serait dû à des troubles du métabolisme général. Souvent des troubles hépatiques peuvent provoquer de telles colorations qui s'atténuent lorsque la santé du malade s'améliore. Il est indéniable en effet que des échanges ont lieu entre les dents et l'organisme et que leur coloration est fonction souvent d'un état.

De plus, nous avons fait souvent l'observation que des déséquilibres humoraux ou nerveux avaient un effet sélectif sur les dents. Les incisives supérieures ont surtout des rapports avec l'appareil respiratoire, les prémolaires avec le système glandulaire et les molaires inférieures avec le système nerveux. Ce pourrait être une des raisons pour laquelle toutes les dents de cette personne ne sont pas atteintes de la même façon.

Il peut y en avoir une autre, la structure propre de la dent peut avoir subi des perturbations lors de sa formation. Il conviendrait alors pour en avoir une confirmation, de contrôler comment sont les premières molaires.

Avant tout autre, l'état général de la malade est à connaître car un traitement par simples topiques, rayons U.V. etc. serait voué à un échec.

G. N.

MÉDECINE DENTAIRE ET SYNCOPÉ

Question VI

Que doit et que peut faire le médecin-dentiste en face d'une syncope alarmante? Quels sont les moyens à sa disposition?

Dr M. (Lausanne)

Réponse:

Fort heureusement la syncope est devenue un accident rare, du fait surtout du degré de perfectionnement des anesthésiques. Cependant, elle peut aussi être due à une affection générale que le dentiste ignore.

Quoi qu'il en soit:

1. Faire affluer le sang au cerveau en couchant le malade en position déclive.

2. Contrôler que les voies aériennes soient libres. Desserrer les vêtements, retirer les prothèses si possible, nettoyer avec la pompe à salive ou un tampon, les mucosités pouvant obturer la gorge. Si le patient a du trismus, mettre un ouvre-bouche.

3. La plupart des cabinets dentaires ont maintenant une bombe à oxygène. Son emploi en ce cas, peut être des plus précieux.

4. Le cœur doit être soutenu par de la coramine, du camphre ou de la lobéline.

5. N'oublions pas la respiration artificielle chaque fois que l'on constate que les mouvements respiratoires spontanés ne se font plus.

6. Si le cas semble très sérieux, faire appel à un médecin, afin qu'aucune négligence ne puisse être imputée au praticien.

Quant à l'aspect médico-légal de la question, comme le rappelle Klotz (Information Dentaire 10 avril 1952. *Méd. et Hyg.* 1er mai 1952) l'urgence légitime les soins les plus audacieux, sous réserve qu'ils soient conformes aux données universellement admises et dispensés avec une technique impeccable. On ne reprochera donc jamais à un dentiste d'avoir outrepassé ses droits quand il y va de la vie du malade. En cas de décès, s'abstenir de cacher le corps ou de le transporter au domicile familial, mais prévenir le commissariat de police, qui fera les choses régulièrement.

Mais qu'à l'égard de la famille, le praticien soit toujours prêt à prouver que tout a été mis en oeuvre pour éviter l'accident et pour lutter contre ses effets.

G. N.

Médecine et Hygiène, le 15 mai 1954

Journal

OF THE CANADIAN DENTAL ASSOCIATION

Occlusal equilibration of the natural dentition*

by SAM CRIPPS, B.A., D.D.S., L.D.S., R.C.S. (Eng.)

Lecturer in the Department of Periodontia, McGill University.

Although progress in many branches of dentistry has been phenomenally rapid in the past thirty years, the recognition of certain essential practices, proven scientifically and clinically, lags sadly behind.

The field of periodontology is very slowly coming into its own. Gingival disease and disturbance of the supporting structures are beginning to claim some attention from the dental profession. At the same time, the diagnosis and treatment of anomalies of the biting and masticating mechanism of the natural dentition of the adult interest the few rather than the many. The story of occlusion, the normal and the abnormal, has been competently reported in our literature by a number of men. They have described with clarity and persuasion, the elimination or reduction of adverse occlusal forces, the production of a gliding articulation which induces a

freedom of movement of the condyles in the glenoid fossae as well as the occlusal surfaces of the teeth, the potentiality of increasing or controlling natural wear and the encouragement of a normal mastication of food. Much has been done in an attempt to fire the enthusiasm of the general practitioner, but unfortunately, the need for repetition and more extensive propagation is still great.

First and foremost, we must believe not lightly but implicitly, that pathological occlusion plays a significant role in the etiology of periodontal disease. This conviction based on the clinical observations and research studies of reliable investigators will be fortified by one's own experiences after attempting several simple cases. As Craddock quite correctly points out, "At least some improvement in periodontal disease can be secured without occlusal diagnosis and equilibration," but a careful survey of post-treatment results in a number of conditions will reveal a percentage of recurrence traceable to the occlusal factor that has been ignored.

Let us consider the controversy which has arisen regarding the wisdom of encouraging dentists at large to grind the

*Presented to The Montreal Dental Club in April, 1953, and the annual meeting of The Canadian Dental Association in October, 1953.

teeth of their patients in an effort to obtain balanced occlusions. In the past, some periodontists have strongly disapproved of this policy. They felt that the responsibility was too great and that more harm than good would result from this universal participation. To-day, with an increasing number of dental schools interested in teaching sound methods of diagnosis and treatment of the occlusal factor in periodontal disease, the prospect of a personnel completely untrained in this type of work is not as depressing as it was years ago. True, selective grinding is fraught with some danger, so too are other daily practices in dentistry. We must face up the fact that a handful of periodontists can hardly cope with the thousands of abnormal occlusions that are present in the mouths of our patients. It is high time that the profession as a whole assumed this responsibility.

Obviously, the practitioner must equip himself with an adequate knowledge of the *modus operandi* of a normal occlusion, the function of the temporomandibular joint, the diagnosis of occlusal disorders and the techniques evolved for the co-ordination and equilibration of an abnormal occlusion. How much or how little to do will be governed by the operator's judgment based on the experience gained in this work. Common sense as a guide should prevail at all times.

Another factor which has discouraged many a novice is the problem of the sceptical or apprehensive patient. Pioneers in this field recall their most trying years when they first undertook to grind the natural teeth of their patients. The immediate reaction to any attempt made at grinding was "Won't my teeth decay if you grind them?" We, the members of the dental profession are the agents responsible for the dental education of our patients and their attitude towards any particular form of treatment. Approaching a patient with a menacing stone in the handpiece, and attempting to grind his teeth without so

much as a word of explanation, is not the recommended method of enlisting co-operation. Current prejudices and misconceptions can be successfully dispelled by a reasonable and confident explanation that the removal of the outermost layer of enamel will still leave ample covering for the tooth. Also, a simplified version of the story of occlusal disturbances and their sequelae will promote a feeling of greater relaxation and assurance on the part of the patient.

It is common physiological knowledge that the stimulus of normal function is required for the proper development of any organ or tissue. Proper development means that the organ or tissue must have sufficient structural strength to function adequately without breaking down. Nature has a very elastic method of attaining this result. For example, alveolar bone will not only tolerate great pressure and tension which are transmitted through the long axes of the teeth, but in a favorable environment will even increase by weight and by volume. Conversely, oblique and horizontal forces will induce destruction of the supporting bone structure. We have all seen patients, particularly those with south-eastern European backgrounds, who have lost a great number of teeth without subsequent replacement. The remaining members of the arch are obviously overloaded. One would expect periodontal collapse and loose teeth. Quite surprisingly, these isolated teeth are extremely firm, braced by bulging alveolar plates and woe to the poor dentist who may have to remove them at some later date.

The ideal occlusion is one which provides maximum function, hence maximum stimulation within the tolerance range of the tissues concerned. On the one hand, maximum function is required to chew our foods efficiently; on the other, maximum stimulation is essential to build healthy, strong and resistant tissues for the teeth.

The tolerance point of the underlying structures may be affected by many

factors. For example, it can be raised by controlling the functional stimulus, by improving the bacterial or systemic environment; or it can be reduced by improper function, deleterious bacterial or systemic influences.

The occlusion of the teeth is chiefly responsible for the functional stimulation of the periodontal tissues. One tooth out of function for some time will not have the same tolerance as will one in normal function. A bridge abutment placed on a tooth that has not had an antagonist for a number of years is risky dentistry. Again, chronically infected tissues will not have the high tissue tolerance enjoyed by healthy tissues. Some of the chronic Vincent cases of the last war are typical examples of this classification. Fixed bridgework and removeable dentures inserted in these debilitated mouths must be designed with these factors in mind, if successful results are to be attained. Whereas a single tooth abutment on either side of the edentulous space might be quite satisfactory for the normal mouth, double abutment insures a safer service.

The purpose of occlusal equilibration is therefore to obtain and maintain a state of equilibrium between the forces of occlusion and the resistance of the periodontal tissues. The amount and quality of supporting bone of each individual tooth and the length and shape of the individual root must be carefully assessed by all the clinical and radiographic means on hand, before undertaking the task of a redistribution of occlusal forces.

Certain loads are placed on the teeth during mastication and are transmitted by the fibres of the periodontal membrane to the supporting tissues. Those considered most destructive are:

INDIVIDUAL LOADING occurs when one or a few isolated teeth are burdened with maximum loading at some phase of occlusion or articulation to the exclusion of the remaining members of the arch. This overloading usually results in tissue destruction. Correction involves the

allocation of the masticating load over more teeth.

OBLIQUE AND HORIZONTAL LOADING:

The conical shapes of the roots of the teeth, the architectural design of the alveolus and the histological structure of the periodontal membrane were planned, it seems, to having the forces applied to the tooth equally distributed through the fibres of the periodontal membrane to the alveolar bone. This is what actually happens when the resultant forces are applied in a direction parallel to the long axis of the tooth. In horizontal stress, one half of the fibres is stretched to the limit, the other half compressed. This may lead to pathological changes in the periodontium varying with the age of the patient and the inherent tolerance of the tissues. By means of selective grinding, oblique and horizontal loading can be reduced by altering the inclined planes of the offending tooth or teeth.

DIAGNOSIS:

Some of the more obvious signs and symptoms of occlusal disharmony are as follows;

SIGNS:

- (1) Traumatic crescents.
- (2) Stillman's clefts.
- (3) Pocket formation in isolated parts of mouth.
- (4) Mobility of teeth.
- (5) Gingival recession.
- (6) Excessively worn teeth.
- (7) Enlarged veins in muco-buccal fold.
- (8) In a radiographic examination, the presence of isolated areas of vertical resorption in an otherwise uniform, high bone line. This picture is particularly diagnostic of centric occlusion interferences.

SYMPTOMS:

- (1) Pain in the teeth during mastication.
- (2) Soreness in the region of the temporomandibular joint.

(3) Cracking noise and clicking in the glenoid fossa.

(4) Sensitive interdental papilla.

(5) Inability to masticate properly.

(6) Discomfort about the anterior teeth immediately after awakening due to bruxism, clenching or undue pressure on the lingual surfaces of the maxillary incisors exerted by the tongue. Gratzinger has named this type of pathological function, dynamic irritation, a form of continuous irritation as opposed to intermittent trauma.

EXAMINATION OF THE PATIENT:

Examination of the patient consists of a study of the following factors.

(1) The number of teeth in situ. The fewer the teeth, the more difficult the condition and the poorer the prognosis. Also note any disharmony in the size and shape of the arches, the size and position of the teeth and the presence of poor restorations.

(2) Finger vibration as a means of determining the response to palpitation and percussion of the teeth during the various occlusal and articulating movements.

(3) The degree of overbite and overjet.

(4) The degree of inclination of the contacting surfaces of the teeth. In closed bites, the angles of inclination of the cusps of the posteriors will rise to 30 degrees. These can be safely reduced to 15 degrees.

(5) The patient's chewing habits. Unilateral chewing should be discouraged. With some, it is habit pure and simple. With others, cuspal interference and a lack of balance compels the patient to use one side only.

(6) The presence of immoderately worn or abraded surfaces called facets. These must be reshaped conforming with the anatomy of the tooth.

(7) A careful examination is made of the centric, lateral and protrusive relationships. The degree of overbite should be carefully measured. Williams has

suggested a classification of overbite determination which can be used as an additional guide in occlusal equilibration. Frequently, one is faced with a deep overbite measuring somewhere in the vicinity of 6mm. Traumatic and traumatogenic occlusion has taken its toll. Should adjustment be attempted or would it be best not to interfere by grinding? Williams' classification has simplified many of these problems.

(8) Examination of the radiographs. A full mouth survey is indispensable for diagnostic purposes. Check for loss of alveolar crests, thickened periodontal spaces and loss of lamina dura or periodontal lamella. The presence of lighter and darker structures of normal bone, density of trabeculation, areas of porosis or sclerosis. The amount of bone loss will be over-shadowed by a finer determination whether the condition is arrested, slowly progressive or rapidly disintegrating. A good radiograph can portend a periodontal condition years before any clinical manifestation is evident.

OVERBITE CLASSIFICATION (Williams):

Normal: Zero-1½mm. of overbite, not compensated by the above mentioned factors. Selective grinding finds its ideal application in this group.

Medium abnormal: 2-4mm. not compensated by the above factors. Occlusal equilibration by grinding alone will frequently secure much improvement for lateral movement and slight improvement for protrusive function. If absolute correction is desired in this group, orthodontic and prosthetic measures followed by selective grinding are indicated.

Marked abnormal: 6mm. or more of overbite. These cases are usually beyond compensation. Correction by grinding alone is of little value in this group. Indeed some compensation, not apparent, may have taken place and any interference by grinding may do more harm than good. In this group, orthodontics is suggested for the young and opening the bite by prosthetic means for the adult,

posterior tooth support, free-way space and temperomandibular joint radiographs permitting.

STUDY CASTS:

At this stage, it is advisable to obtain accurate study casts mounted on an anatomical articulator. A general outline of treatment can be planned with articulated study casts on hand. Although it is generally agreed that the mouth is the finest articulator, much information can be gleaned from articulated models which would otherwise remain undetected. Certainly, the novice should never attempt extensive occlusal equilibration without a careful study of the models of the case. As a word of precaution, it must be remembered that even the most modern of adjustable articulators and the most carefully taken wax registrations are not exempt from a certain percentage of error. Therefore, it is essential that the findings from articulated casts should be correlated with those in the mouth.

THE MECHANISM OF OCCLUSION:

The two phases of occlusion are the static which is the centric relationship, and the dynamic which is identified with the lateral and the protrusive movements in mastication.

THE STATIC PHASE:

The importance of centric relationship in occlusal equilibration of the natural dentition is but a recent development. In the past, attention was focused on the lateral and protrusive relationships as these were regarded as the chief sources of functional disharmonies. Centric disturbances and their significance have come into prominence with the work of McCollom, McLean, Schuyler and others. In discussing the derangement of centric relationship and derangement of excursive relationships, McLean has this to say. "Of these two, centric derangement is more deadly for a simple reason. In excursive disturbances, the force directed

upon the interfering teeth is lateral. The tooth is driven against the side wall of the socket. This part of the lamina dura is strongly braced against the nearby buccal or lingual plate of the jaw. Cortical bone must change to shell bone, to haversian system bone, to cancellous bone, then to spongy bone which melts away. Cancellous bone against which centric forces are directed mesiodistally, is much nearer the melting bone to start with."

Furthermore, these men discovered that premature centric contacts resulted not only in pathological changes in the periodontium but were responsible for far-reaching effects in the temperomandibular joint and adjoining structures which one used to write off as vague arthritic and rheumatic syndromes of the joint, and as such, outside the orbit of dentistry.

Indications for grinding at centric position and incidence of prematurity are as follows:

- (1) The presence of third molars pushing other teeth into interfering positions.

- (2) Over-eruption of third molars or other teeth into a vacant space in the opposite jaw, producing premature contacts and a variety of acquired or convenience centric positions.

- (3) High restorations which can cause an untold amount of periodontal destruction accompanied by temperomandibular pathology.

- (4) Temporary disocclusion of one or several mobile teeth during the treatment phase to provide a period of complete rest. Even here, one must curb the unbridled temptation of indiscriminately lopping off the most accessible cusp peak or inclined plane. The point of centric occlusion, be it a cusp peak or the deepest portion of a fossa, must be relieved in such a fashion as to leave contacting surfaces and angles of inclination which will occlude evenly in all positions when extrusion of these disoccluded teeth will remake contact with their antagonists.

Clyde Schuyler supports the rule of grinding the cusp if it interferes in all

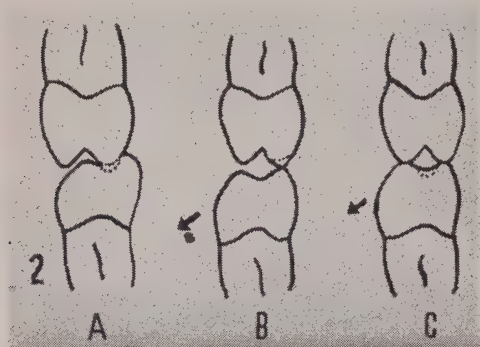


FIGURE 1.

In Figure A, alternative of grinding into the fossa of the mandibular molar or maxillary lingual cusp.

Figure B. In lateral excursion, premature contact is present between maxillary lingual cusp and the mandibular buccal cusp. In this case, grinding of the latter will relieve both centric and lateral interferences.

Figure C. Equal contact is found in lateral excursion. Centric prematurity must be eliminated by grinding fossa of mandibular molar (dotted line). Should the maxillary lingual cusp or the mandibular buccal cusp have been molested to relieve centric interference, disocclusion in the lateral excursion would have resulted.

movements, otherwise the fossa is relieved. (Figure 1.) In the anterior region, the incisal edges of the mandibular teeth may be ground if adjustment for the eccentric excursions has already been carried out. Otherwise, interferences in the lateral and the protrusive movements will continue to traumatise these loose teeth after they have extruded.

(5) When faced with an anterior open bite condition where the jaws are gagged on one or two pairs of posteriors, one may feel justified in closing the maxillo-mandibular opening by grinding the isolated contacting teeth and thus increase mastication medially. This is a compromise measure.

WORKING CENTRIC:

In examining a patient's centric occlusion, the head should be in a normally erect position with the patient sitting up naturally. With a little practice, which

tends to relax the musculature, the average patient will close lightly at centric without difficulty. Tipping the chin will help in stubborn cases. Asking the patient to relax generally is of no use at all. He just collapses in the chair like a deflated balloon while the jaw musculature remains stiff and uncooperative. What we are trying to find out is whether the teeth of one jaw contact their antagonists simultaneously and with equal pressure. This is our objective and with a simple explanation both patient and operator can now work together to attain this end. It is quite surprising how most patients will enter into the spirit of this novel experience and will tolerate a full session without complaining. The average patient, upon light closure can point out some offending tooth in premature contact. Palpation of the area over the neck and root of the tooth will also help to disclose the prematurity to the operator. Two thicknesses of softened tenax wax have been used as a diagnostic measure, with the patient closing into the wax without biting through. The use of a reliable articulating paper will confirm previous findings.

When the decision has been made whether to grind the upper or the lower tooth, the carbon marking can now be tackled. In those cases of actual centric interference, when the patient has to slide a little before arriving at true centric position, the resultant carbon marking must be eliminated completely. In other instances, where too much centric pressure is concentrated on one tooth, it is neither desirable nor necessary to grind the entire carbon marking, disoccluding the tooth completely. Here, depending on the amount and quality of periodontal support, a broad surface contact can be reduced by grinding to a line contact or even to a point. It is purely a matter of curtailing function by decreasing contact.

The dynamic phase includes the right and left lateral and the protrusive movements. The apparatus of mastication was

designed to bite off or cut, crush and chew our foods. The incisors are the cutting teeth, the bicuspid are the chewers.

THE LATERAL EXCURSIONS:

The usual chewing movement occurs when the mandible drops and moves over to one of the eccentric positions, dragging the mandibular teeth across the ridges and the inclined planes of the maxillary denture. At the terminal lateral position, Man pierces or crushes the bolus, perhaps once or several times depending on its consistency. From there, the shearing stroke continues with the opposing cusps engaging to form a pair of shears, cutting up the food. The working stroke continues towards and through centric over to the opposite lateral position where the jaw swings open and returns for another crushing and shearing stroke.

The working stroke moves from eccentric to centric. One patient may chew his food quite normally, first on one side and then on the other, moving his jaw either way, within the bounds of the functioning side. Another may utilize one side only, and always moves his jaw in one direction. Another example is found amongst the locked bites where the direction is practically vertical and the movement is more of a chop than a slide.

THE WORKING LATERAL EXCURSION:

In the examination of the lateral excursions, the patient closes in centric position, and with his teeth in unclenched contact, slowly moves the mandible in a strictly lateral direction. This procedure is repeated for right and left laterals. To aid the patient in making this excursion, a finger is firmly placed in the bicuspid region and he is asked to move his jaw in the desired direction. Slight finger pressure on the chin will herd the wandering types in the right path. In poorly co-ordinated cases where

the patient is not certain whether he is moving right, left or at all, a mirror may help or then again it may prove to make it all more confusing. However, it is worth trying. Fortunately, these difficult cases are not in the majority and even these can be won over with a little practice at home.

The ideal occlusion will show equal contact and pressure on the working side from centric position to the terminal lateral position, and equal contact on the non-functioning or balancing side.

Unfortunately, the average product of this modern age does not fit into this category. Due to interference from the cuspid, lateral incisor or the first bicuspid on the working side or from the last molars on the balancing side, most posterior teeth on the working side are separated by distances varying from .5-6mm. in the terminal relationship. In extreme posterior openings of deep overbites and obviously locked cases, selective grinding is not recommended as a means of improving the occlusal relationship. The more simple cases are the ones that lend themselves to correction by grinding. No hard and fast rule can be given to indicate the necessity for grinding, but careful analysis of Williams' classification of overbite will be a valuable aid in making a diagnosis and in dictating treatment. The ultimate goal at this stage is an occlusion that embodies a lateral excursion free of interference, equality of contact and loading of the posterior teeth on the working side, compatible with the tolerance threshold of the supporting tissues, and finally, a facile and harmonious slide of the antagonising tooth surfaces continuously in contact.

Although tremendous improvement can be obtained on the working side by corrective grinding, ambitious efforts to co-ordinate the balancing and the working sides must be discouraged. In many cases, the securing of bilateral contact by selective grinding is not practicable, even if it is possible. It is

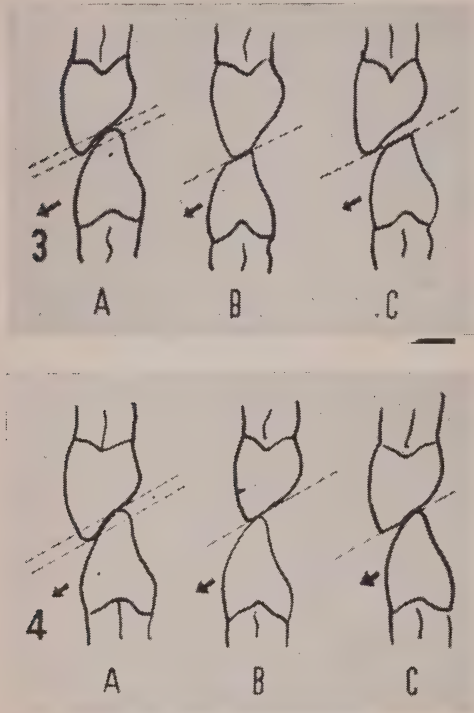


FIGURE 2.

In sub-figure 3, lateral interference has been reduced by grinding mandibular labial edge (B). When patient returned to centric (C), teeth have been disoccluded.

Sub-figure 4. Lateral contact has been obtained by grinding the maxillary lingual surface without mutilating the centric position (C).

generally agreed that Man is a unilateral chewer, that is, that he chews his food on one side at a time only. The acceptance of this theory, coupled with the fact that the entry of the bolus on the working side prevents closure on the inactive side, minimises the importance of bilateral contact lateral excursions. One or two balancing contacts are quite sufficient. In complete artificial dentures, intercuspation and even pressure throughout the right and left lateral excursions, both on the working and the balancing sides, are essential to prevent displacement. This hardly applies to the natural dentition.

It is most important that steps taken to equilibrate the lateral and protrusive movements should not mutilate the contacts of the established centric occlusion. (Figure 2.)

Articulating paper of two different colours is used to maintain this relationship throughout the mouth and thereby maintaining the maxillo-mandibular opening. One colour to record centric

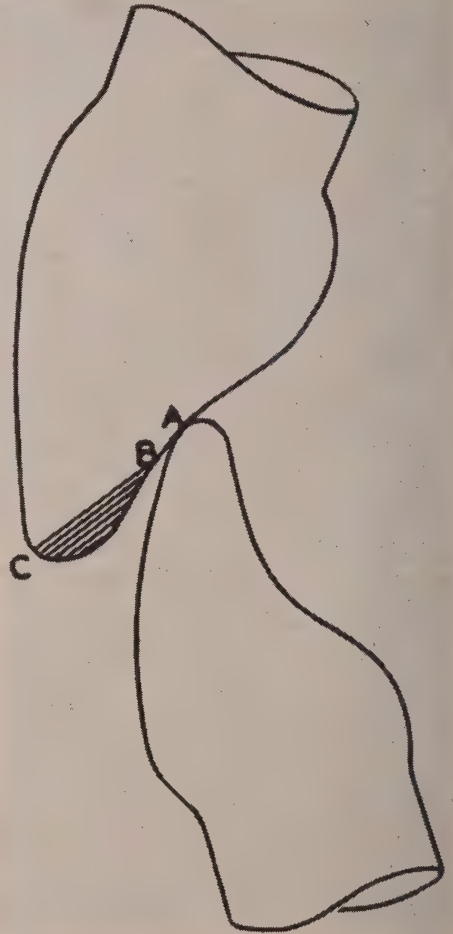


FIGURE 3.

The area A to B represents centric registration. B to C can be relieved as desired without fear of disturbing centric contact.

position and the other to register lateral and protrusive relationships. (Figure 3).

The degree of obtainable contact in the lateral excursions will be influenced by the steepness of the inclined planes of the obstructing teeth, the thickness of the enamel on the interfering surfaces and the sensitiveness of the patient.

THE PROTRUSIVE MOVEMENT:

The protrusive movement occurs when the mandible is dropped slightly and moves forward into the protrusive relationship. It closes upon the bolus with the incisors edge to edge and then moves back to centric position shearing off a piece of food on its way. Ideally, when the mandible protrudes to an edge to edge bite, all the mandibular teeth should make simultaneous contact with their maxillary antagonists. This condition is rare. Frequently, the only tooth found in contact with its opposite number is the central incisor. A few turns with a small wheel stone or disc on the maxillary tooth will change the picture to contact extending to at least another pair of anteriors and probably to all the incisors, both central and lateral. Even bringing in one more central into contact will reduce overloading on the other central by 50%.

The physiology of normal mastication includes the process of tooth wear. Controlled natural wear is an ideal "adjuster" of occlusion because it leads to an equal distribution of the occlusal load over the maximum number of teeth. The resultant broader areas of occlusal contact favour deposition of bone at the alveolar edges. In addition, physiological wear shortens the extra-alveolar arm, thus reducing oblique and horizontal stresses. Occlusal equilibration by bringing more tooth surfaces into contact will foster natural wear as the latter will only take place with tooth-to-tooth contact.

The modern mouth exhibits either too much or too little wear. In some, the

morsal surfaces of many a forty year old occlusion disclose no appreciable wear whatsoever. In others, immoderately worn occlusal and incisal surfaces result in unfavourable loading, the loss of sluice ways and food impactions. Both the insufficiently worn and the excessively worn occlusions can benefit by selective grinding.

SUMMARY:

(1) The use of carbon paper; old carbon marks should be erased prior to the taking of a new registration. Thin oiled carbon paper is used to avoid blurs and smudges. Registration should be taken bilaterally. Carbon marks go in pairs. Each marking has a complementary one on the opposite jaw. They should be considered together.

(2) Equilibration of the contacts of one relationship must not disturb the established contacts of other relationships. Carbon marks of the fossae, the peaks and the inclined planes of the maxillary lingual cusps and those of the mandibular buccal cusps must be shunned during the equilibration of lateral and protrusive excursions.

(3) Facets must not be made during the grinding of the tooth surfaces. The general anatomy of the tooth should be retained. The sharpness of the cutting cusps and the depth of food exits must be secured. Flat surfaces do not cut effectively and because greater pressure must be exerted for purposes of mastication, overloading, excessive to the threshold of tissue resistance may be the result. Tooth cutting is done by a moving contact point on a ridge, incline or convex surface.

(4) The dominant tone in selective grinding is the retention of the maxillo-mandibular opening.

(5) Although gross interferences should be removed during periodontal treatment of the soft tissues, final adjustment of the occlusion should be the last step in treatment. Excision, packing and

other phases of therapy do produce movement of the affected teeth.

(6) Plunger cusps must be relieved and differences in height of adjacent marginal ridges should be removed to avoid premature contacts and food impactions.

(7) Three six-monthly inspections are essential to check any possible supra-occlusion of the anteriors. We must remember that the occlusion of the teeth is not a static but a fluid entity.

(8) The last step in the operation is a thorough polishing of all the ground tooth surfaces. Rough surfaces are never popular with the patient, but what is more important is that roughness of the contacting surfaces increases the coefficient of friction and can be injurious to the supporting tissues.

CONCLUSION

The diagnosis and treatment of periodontal disease should not be undertaken without a careful assessment of the occlusal factor. Whether it is a primary etiological factor in some cases or merely contributory in others, it has been accepted fairly unanimously that traumatic occlusion increases and accelerates the destructive processes in the established periodontal condition.

Occlusal equilibration must be a systematic procedure. The practice of spot grinding is a dangerous pastime, implying a haphazard grinding of the teeth and should not be confused with scientific equilibration. The latter involves a thorough study of the normal picture and the individual formulation of a plan of

treatment of the abnormal. Although dentists have been censored for under-grinding, over-grinding or not grinding at all, it is better when in doubt to do too little than too much.

No phase of restorative dentistry from the humble amalgam to the most complicated bridge or partial denture can afford to ignore the importance of the occlusion and the articulation of the teeth. Innumerable prosthetic failures can be laid at the door of indifference and inattention to the occlusal factor.

Selective grinding is no panacea. It renders greater service as a preventive than as a curative agent. In this era of universal awareness of prevention, occlusal equilibration opens up a new field of endeavour in dentistry, and must be accepted as an integral part of dental practice.

BIBLIOGRAPHY

- Box, H. K. (1940) Twelve Periodontal Studies. University of Toronto Press.
- Box, H. K. (1930) Oral Health, 20, 642-646.
- Craddock, F. W. (1949), J.A.D.A., 38, 709.
- Gratzinger, M. (1948), J.A.D.A., 37, 294-301.
- Hemley, S. (1944), Fundamentals of Occlusion. Saunders.
- Jankelson, B. (1953), J.A.D.A., 46, 375-386.
- Kronfeld, R. (1943), Histopathology of the Teeth. Kimpton.
- Linghorne, W. J. and McIntosh, W. G. (1944), Course of Lectures in Periodontia. Toronto.
- McLean, David W. (1938), J.A.D.A., 25, 1583-1594.
- McLean, David W. (1944), J.A.D.A., 31, 1587-1597.
- Miller, S. (1943) Textbook of Periodontia, Kimpton.
- Morris, Harold G. (1951), J. of Periodontology, 22, 216-224.
- Noyes, F. B. (1943), Dental Histology and Embryology, Kimpton.
- Schuyler, Clyde H. (1935), J.A.D.A., 22, 1193-1202.
- Schuyler, Clyde H. (1939), J.A.D.A., 26, 735-738.
- Schuyler, Clyde H. (1947), N.Y. State Dental Journal, 13, 445-462.
- Stillman, P. R. and McCall, J. O. (1936). A textbook of Clinical Periodontia. MacMillan Co.
- Williams, C. H. M. (1938), Course of Lectures, Montreal.
- Williams, C. H. M. (1952), J.A.D.A., 44, 748-756.

Despite the healthful purity of the breathtaking cigarette filters, currently advertised, it is desirable to brush your teeth after a few hours of smoking. And that's when you get into the real *abracadabra*. In the old days, before we knew better, it used to be assumed that a proper toothbrush had something to do with effectively brushing the teeth. But now, if you employ the right brand of toothpaste, it doesn't seem to matter whether you use steel wool, a sponge, or a putty-scraper. These new pastes have evoked the most remarkable fairy tales since Hans Christian Anderson. Maybe I'm not quoting accurately, but at least the impression which the ads give is that a certain brand of toothpaste will, on a thirty-day trial basis, practically restore lost teeth—although the modest implication seems to be that the restoration of the *wisdom* teeth may take a bit longer.—The Reverend John Ellis, D.D., from "The Rector's Column," Church of the Heavenly Rest, New York, N.Y.

Psychosomatic dentistry*

by BERNARD B. RAGINSKY, M.D., C.M., F.I.C.A.,
F.A.C.C., F.F.A.P.M.

All professional men, especially in the medical sciences, use the psychosomatic approach more or less. They try to understand the emotional elements involved in the disease process and try to take the patient himself into consideration. This holds true especially in the dental profession since the emotional element in their patients is usually more acute and therefore more evident than in other branches of medicine. Most of us pride ourselves on our ability to recognize these emotional elements and particularly on the way we treat them. The thesis of this paper is an attempt to show that in actual practice, very few of us are adequately orientated, desensitized against the neurosis of our patients, or trained to handle the emotional aspects of the conditions we treat. All too often, we do not and cannot recognize the psychodynamics and the psychophysiologic processes involved.

Recently much has been written in the dental journals about Psychosomatic Dentistry (1,2,3,4,5,6,7). It is difficult, however, to visualize how the readers of such papers can acquire a real understanding of the subject through these channels alone. It may well be compared to the reading by the lay public of articles on medicine published in the lay popular magazine. Just as one would not expect to make an adequate medical diagnosis without first having been trained in anatomy, physiology, chemistry, pathology, medicine, etc., so one can hardly expect the dentist to understand the psychosomatic approach without first learning the broad patterns of human motivation and personality development; its adaptations and its maladaptations. He must be able to recognize anxiety in its many forms of expression and he must be as familiar

with the neuroses as he is with his drill. Without this knowledge his study and reading of psychosomatic literature cannot help but be confusing.

A critical analysis of existing theories and hypotheses in any field of science becomes necessary from time to time in order to combat complacency and to stimulate thinking. This is true not only in the fields of the older sciences but to no lesser degree in the newer field of psychosomatic concepts. Psychosomatic principles have not been too well formulated, a coherent body of knowledge has not been successfully compiled nor have operational procedures been well developed. Too often in the recent past have methods of brief therapy been advocated, even for the unskilled, to be applied to the most deep-seated and recalcitrant chronic dysfunctions and to extremely rigid psychological defences. (8.)

"Psychosomatic" connotes more than a kind of illness; it is a comprehensive approach to the totality of an integrated process of transactions among many systems: somatic, psychic, social, cultural and anthropological. It deals with the living process that is born, matures, and develops through differentiation and successive stages of new forms of integration of parts and other wholes. It deals with stresses, strains, and adjustments, with acute emergency mechanisms, disintegrations, and chronic defensive states or disease. In fact, "psychosomatic" refers not to physiology or pathophysiology, not to psychology or psychopathology, but to a concept of procedures among all living systems and their social and cultural elaborations (8).

Another term which might be used for this approach is "behavioural science" which implies psychosomatic or comprehensive approaches. It deals with man as a biological organism striving as part of his animal, human, and physical environ-

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ment for continuity and for self-fulfillment as an individual, as he integrates into varying-sized groups. It deals with the vicissitudes of his struggle between his inner energies, their quantitative and economic aspects and the forces conducive and antagonistic to their discharge or satisfactions (9). The evolution of these forces and their internal signs, with their satisfactions and dangers, into socially communicable symbols; the evolution of irritability into vigilance and consciously experienced anxiety, has led to the process of symbolic internalization of danger and intrapsychic defenses. As a result, the acute emergency responses to external danger are less disturbing to man than the long-continued psychosomatic reactions to stresses that have become internalized and cannot be avoided or abandoned. Comprehensive medicine has become focussed on anxiety, its source, processes and effects, as a continuous function in man. Health and illness vary only in degree of smoothness of transactional operations; in nearness to equilibrium or disintegration, and degree of de-differentiation in response to stress, signaled by anxiety. It must be remembered, too, that psychosomatic diseases possess a long life-cycle and that the incubation period may be of many years' duration.

Since dentistry is a specialty of medicine, the dentist is interested in these problems especially as they relate to the mouth and to the individual possessing this important and primitive organ. Many formulations of psychosomatic disturbances, characterized by fluctuations related to states of emotional tension are based on oral dependancy, oral frustration and oral hostility (10). Psychosomatic syndromes are due usually to basic expressions of infantility and immaturity. The infant receives its satisfactions, tests the world of reality and reacts to others in the environment largely through the mouth. The infant becomes aware of the world around it, not through its eyes and hands but through its mouth.

The rudimentary face and mouth serve

at least five functions for primitive organisms. These include detection of desirable sources of energy, capture and preliminary preparation of energy-giving food, determination of the direction of movement towards these goals, a lure for the capture of a mate, and a gateway to the primitive gut (11). Late in the evolution of the bony mask of the face, the bones become overlaid with muscles. Mobility of the lower jaw and flexibility of facial musculature developed together as infantile dependancy became prolonged and the eruption of the teeth delayed. Disturbance of bone formation and growth, excessive formation of lymphoid tissue in tonsils and adenoids, are believed to be concomitant and secondary to endocrine deficiency often due to infantile malnutrition (12). Thus, deficient primary intake of food may seriously affect later functions of the intake apparatus.

The two glands of internal secretion which are concerned with growth of bones and with maintenance of tissue activity, namely, the pituitary and thyroid glands, are derived phylogenetically and embryologically from the buccal mucosa of the oral plate in the first instance and branchiogenetically in the second instance. This derivation is important in understanding mouth pathology from the psychosomatic viewpoint, since certain types of emotional stresses affect these glands of internal secretion.

Another observation of interest is the principle of antithesis and subsequent symbolic representation and communication as applied to movements based on the neurophysiological pattern of reciprocal innervation (13). Examples of this concept can be seen as the snarl of anger or fear becomes the smile of pleasure on rebound, or the squirming, red-faced infant who quiets down and turns up its little mouth in a smile once the gas pains stop.

The development of teeth has been of considerable interest not only to orthodontists but to general dentists as well, as a basis for understanding defects of the

dental arch, diseases of the teeth, and the problem of artificial dentures. The six anterior teeth determine the shape and size of the mouth inasmuch as they normally form an arc of a circle, but countless distortions of a perfect arc are encountered. The orbicularis oris is always slightly contracted and follows the contour of the teeth, which thus determines the size and shape of the mouth (14). There is a considerable possibility that changes in the innervation of the orbicularis oris due to chronic emotional tension, influence the position, retention, and stability of dentures (15).

A condition termed rampant decay in adolescence, involving many teeth in rapid succession without known cause may become less mysterious when studied from the psychosomatic viewpoint. There seems to be a high correlation between psychological factors and dental health (16). I have personally observed several cases of rampant decay respond completely to adequate psychotherapy.

Neurotic need for tooth extraction to expiate a sense of guilt, fingernail or pencil biting, excessive chewing, grinding and clenching of teeth, perverse taste for acid foods, etc., may contribute to disturbances within the oral cavity. Burning tongue and displacement of psychological conflicts to the realm of taste and smell are often of dental concern (17).

The neurotic eating habits of patients with mouth pathology has not been given adequate attention by the dental profession. For each individual, very early in life, foods become associated with diverse emotional meanings, so that for any given individual there is scarcely a food which can be considered to be emotionally neutral. In our way of life such foods as chocolate, hot dogs, candy and ice cream have come to be regarded as reward foods. Parental insistence that foods such as spinach, carrots and milk must be eaten by the child, often calls forth resistance on the part of the child. This is retained even in adulthood as a symbolic re-

jection of parental authority. On the other hand, forbidden foods usually have a great appeal for the child. This is particularly true when he is told that he can have coffee, tea, beer, etc., only when he is "grown-up." Occasionally overindulgence in these foods in later adult life is over-determined by the individual's desire to make up for earlier deprivations of childhood and to assert adulthood. An individual's patterns of choosing and eating foods thus becomes psychologically highly structured, conditioned responses. Foods have emotional values for an individual over and above the hunger satisfying capacity of all foods. Some foods are "gustatory pleasure" foods, "pleasure associated" foods, "security" foods, "reward" foods, "texture" foods, "fetish" foods, and so on. The patient's urgent need for ingesting foods in the above categories in times of stress may be so great that the emotional support derived from eating them far outweighs the consequences of food-induced mouth pathology (18).

It has been shown that the mouth is capable of absorption in varying rates depending on the molecular size of various substances (19). Such foodstuffs stimulate the secretion of digestive juices, not only as a conditioned response with what might be called appetite secretion, but also as a response to the initial oral absorption. Depending on the rate of absorption and the type of substance mouthed, preparatory alimentary and other enzymatic secretions are stimulated. The mechanisms, functions, and modifications of such important consequences of mouth stimulation should receive more attention, and an attempt made to better understand the psychologic components involved.

Bruxism is a disease which manifests itself in the mouth by its destructive effect on the dental apparatus. It is therefore an organic disease at that level. At the physiological level it presents activity of the mouth musculature and is a

functional disease (20). Malocclusion of the personality is a more serious disorder than a malocclusion of the teeth. If thumb-sucking is suddenly and forcibly stopped, there may be a further regression to bedwetting. The need to get so-lace and comfort and to satisfy oral craving is often so imperative that it should not be met with frustration and prohibition (21). For example, a thirty-one year old veteran who was treated for numerous painful, bizarre subluxations of the jaw, had recurrences frequently even after the surgical removal of the condyles. His drive for self destruction was so great that when the subluxations were interfered with by treatment, he blinded himself by means of foreign bodies in the eyes. As a result of this blindness and a subsequent regression to the more infantile dependent role, subluxations of the jaw stopped completely (22).

Chemical changes in salivary secretion and changes in vascular caliber within periodontal tissues may encourage bacterial activity. Chronic emotional tension interferes with salivary secretion. Acute emotional tension resulting in the suppression of salivary flow is best evidenced by the pitcher of water placed before the apprehensive lecturer. Mental turmoil and conflict tends to decrease the calcium content of the saliva while homeostasis tends to increase it (23). The pH ion concentration of the saliva in excited or tense individuals is decreased. The saliva of stable individuals is more acid (24). The degenerative changes which affect the supporting structures of the teeth and produce acute or chronic inflammatory or suppurative lesions, thus tending to break down periodontal structures, are often caused by emotional disturbances which interfere with appetite, normal eating habits, sleep, mouth hygiene, digestion, and love. The emotional causes in these cases are not too easily diagnosed nor lightly treated. Gingival inflammation and pain are commonly seen in psychiatric practice. Regression of the lesion is observed to run parallel with

improvement in the emotional status of such patients.

The development of the newer materials for taking impressions has contributed to the reduction of retching, gagging and vomiting. In spite of this, there are some patients who find it most difficult to undergo this procedure. The introduction of a foreign substance into the oral cavity for some patients has the significance of a threat such as the introduction of a "foreign body" into other cavities of the body. The treatment here is to determine the symbolism involved and to dissociate the symbol from reality. A more superficial and often successful approach is to reduce the tension and anxiety of the patient through suggestion. This will be discussed later.

Another area of psychosomatic interest for the dentist is in the field of anxiety and apprehension in the dental patient for dental manipulation and especially in the field of local and general anesthesia (25). The dentist's interest in anesthesia and the allaying of anxiety is a very natural one indeed. Relief from pain and anxiety is not more urgent in any field of medicine or surgery than it is in dentistry. It must be emphasized, however, that the qualities which make for a fine oral surgeon do not necessarily apply to the qualities required to give a smooth anesthesia. It is for this reason that from the psychosomatic viewpoint, in some instances it is necessary to make some adjustments. One of the pitfalls in the training of the oral surgeon in anesthesia is that he is likely to treat this field in somewhat the same way as in his manipulative work in dentistry — he learns a technique. It would seem necessary that he be made aware of the fact that the basic psychologic needs of the patient are vastly different when undergoing anesthesia from those when undergoing ordinary manipulative work in the mouth.

I am not inclined to agree with those (26) who state that the personality of the

dentist or physician is non-toxic and that it does not throw any strain on the patient's heart, liver, kidneys or respiration. I am more inclined to the belief that the proficiency of the doctor depends as much on the aptitudes and capacity as on the schooling and experience; and as in other spheres of human endeavour, certificates of qualification and degrees do not afford an entirely reliable means of measuring efficiency. The therapist, no matter what his field, will never reach the optimal results in his own field regardless of his diagnostic acumen or his manual dexterity and skill, if he fails to take into consideration the patient's emotional needs. The ability to understand and handle a patient's emotional needs extends the scope and usefulness of the doctor. The doctor who does not recognize the emotional elements in the causation and the treatment of disease processes does not carry a full kit of tools.

Every rational patient about to have an anesthetic prior to operation has considerable concern regarding the event. The more serious the operation, the less fear of the anesthetic, since in the case of the former, anxiety is mobilized towards the results of a serious operation whereas in the case of minor dental surgery, the anxiety is directed towards the anesthesia itself since it represents the real threat for this type of patient. The pre-anesthetic period should not be considered as the period immediately preceding induction of anesthesia but rather from the moment the patient is told that an operation is to be done and that an anesthetic is necessary. The shorter this period may be arranged for, the less cumulative anxiety results. It is easy for the lay person to associate the loss of consciousness and surrender of his body to the control of another as a form of death and to feel all the uneasiness brought about by coming in contact with the unknown. This state of mind has the profound sympathy of the anesthetist who is in a position to realize how erroneous the patient's concepts really are. Since, however, this

situation repeats itself many hundreds of times for the average anesthetist, he tends to treat it like an old wornout gramophone record. He is apt to hear and see it without paying too much attention to it. It has been remarked that we are deaf while we are yawning. The same act of drowsiness that stretches open our mouths, closes our ears. It is much the same in acts of understanding. A lazy half-attention amounts to a mental yawn.

Psychotherapy may range anywhere from an admonition to be quiet and behave oneself, or the unimaginative slap on the back with a hearty "You'll be alright", to the other extreme of hypnosis. (27) (28) (29) (30) (31) (32). The time available often makes it impossible to prepare the patient psychologically as fully as desirable but every opportunity to do so should be utilized. It is of great advantage to be able to assess quickly the type of patient with which one has to deal. This will help him foresee whether the anesthesia is likely to be easy or difficult. The ability to "size-up" his patients during a few minutes of conversation is a very valuable asset to the dentist-anesthetist.

The fear-reaction which is an essential factor in biological survival, consists of a complicated series of changes which prepares the individual to resist the incident which evokes fear. He may do this in any one or a combination of three ways: to fight, if necessary with physical violence; to run away; to give in to his dependancy needs and submit just as a child does when it asks to be taken into its mother's arms when hurt or frightened. Psychotherapy should be directed towards minimizing this "fight or flight" mechanism.

Some investigators suggest a type of psychotherapy which is almost mechanical. The following are but two examples of this method. For reducing the emotional trauma of anesthesia in children, Jackson suggests the telling of stories,

playing music, impregnating the mask with pleasant smelling substances and "pretending". In her opinion, this is part of the art of anesthesia and does not lend itself well to reporting in scientific journals (33). Douglas (34) finds that one means of decreasing pre-operative tension and enhancing whatever relaxation has been accomplished with premedicants, is through the use of music and "suggestive" therapy, playing appropriate selections of especially prepared spoons on a tape-recorder and heard by the patient through earphones which increases the personal contact and eliminates the sounds and noises of the operating room. For a broader understanding of psychotherapy for non-psychiatrists, much has been written in such a way as to be very helpful to dentists. (35) (36) (37) (38) (39.)

If it be true that the technique of dentistry cannot be learned from books alone; that for the most part the instruction must be clinical and can be taught only in the operating room and the clinic, then it is truer still that the understanding and the handling of the psychological aspects of the dental patient cannot be learned from textbooks alone. The subtleties involved in handling these patients successfully must be observed to make the theory involved become realistic and practical. Reading helps to formulate the problem; a preceptor helps in making good use of this knowledge. While it is not within the scope of this paper to go into the psychodynamics of anxiety, apprehension and anguish fully, it might be of some benefit to outline the problems involved. Without it, the use of more meaningful psychotherapy would be useless.

Anxiety may be described as a feeling of diffuse, unformulated uneasiness and apprehension which is usually reflected psychosomatically in a characteristic combination of visceromotor disturbances and skeletal tensions. Definitely, it consists of palpitation, disturbed respiration with hyperventilation, pressure sensations in

the chest and throat, flushing, sweating and tremulous weakness accompanied subjectively by a diffuse, unformulated but intense obsessive apprehensiveness. The language patients use to describe such symptoms varies, but the symptoms are alleviated when the stresses are relieved (40). It is not too difficult to ascertain that these stresses are made worse when the patient's attempt to repress or handle this anxiety is interfered with by the dentist or by the induction of anesthesia which removes his defenses. A simple example of one type of defense against anxiety is the tendency to keep touching an aching tooth in order to re- elicit the pain and thus to re-assert mastery over it. However, once such re-testings begin to evoke really unbearable pain, anxiety is repressed, and the explorations stop. On the other hand, the severity of a pain-percept itself is highly contingent on expectancy, and can be readily influenced by induced changes in attitude (41). The induction of anesthesia interferes with the patient's defenses and anxiety reaches its peak at this point. Every psychic and somatic manifestation of anxiety makes the induction and maintenance of anesthesia more difficult and, at times, more dangerous. The need to understand and treat anxiety in this situation is self-evident.

Anxiety covers a wide range of mental states, from mild uneasiness and worry to paralyzing panic. There is another type of anxiety which is very important from the practical point of view, namely, anxiety that is not experienced as such, but is held in check by severe counter-measures inspired by example, culture or training. In such patients the somatic changes are much more marked, producing marked increase in metabolism. Since increase in basal metabolism requires an increase in the anesthetic agent, the effects of average doses of premedicants and average amounts of the anesthetic agent are totally inadequate. It is important to know that patients with anxiety have a low threshold for sensation of

pain; that they respond with withdrawal and with signs of motor disturbance to lower intensities of stimulation than do normal subjects (42). Fear produces a profound temporary change in the organism and if it is very intense, it may even annihilate the organism. Expressions such as "frightened to death" are not simply figures of speech. Fear is not a spiritual experience, but a total biological response. Owing to a repetition of fear responses, a conditioning takes place. This conditioning integrates the fear response into the whole mental and physical structure of the individual (43). Fear is perceived as something conscious in source, while anxiety is unconscious in source. At this stage of our knowledge, we cannot explain why in some anxiety reactions the anxiety is rapidly drained away by analyzing the content, while in others no change occurs even after prolonged and intensive trial.

We have been so interested in the anxiety of our patients that I am impelled to bring to your attention an important aspect of this problem; the fear and anxiety in the dentist himself. This fear and anxiety may be overt or concealed but is most commonly present in those who fear that they do not know enough about the subject of anxiety in their own patients and are, perhaps, not able to apply all available evidence concerning anxiety in theory or practice. Because of this, they tend to become insecure and develop professional phobias. They always appear to apply the same concepts and therapeutic measures in their practice. Any attempt to change their attitude towards dental procedures, acts as a threat to their organized defense mechanisms. They find it difficult to learn new concepts. They pay a high price for this method of defense, both physically and mentally. In order to handle the patient's fears and anxiety adequately, one must have one's own fears well resolved. Herein may lie one of the factors responsible for the difference of opinion amongst dentists regarding premedication in the

ambulatory dental patient. A heavily premedicated patient presents a lesser threat to the emotionally insecure operator than does the more wide awake one.

One of the most potent forces we have at our command for reducing fear and anxiety is through the use of hypnosis. When I was invited to address this Society, it was suggested that I speak primarily on hypnosis. However, it is advisable to place this subject in its proper place of reference. It is for this reason that I will discuss this subject as only one aspect of psychosomatic dentistry.

Ignorance of, and the misuse of hypnosis have led to considerable acrimony. The American Dental Association has taken official recognition of this matter in an editorial entitled "Hypnosis in dentistry is extremely impractical". (44.) The editorial writer, while acknowledging the use and the need of the "art" of suggestion in dental patients, questions its use to the point of hypnosis. It is the consensus of opinion of the workers in this field that it is difficult, if at all possible, to draw a distinction between the two; where suggestion ends and hypnosis begins. When more is known about the subject, a more definitive stand may be taken by those in authority. However, one aspect of the problem appears to be clear and that is the effects of hypnosis may be dangerous when hypnosis is utilized by unskilled, inept, untrained, emotionally sick or poorly motivated individuals (45). From this point of view the question of whether or not dentists should make use of this technique any less than physicians, is unimportant. Physicians and dentists should not be allowed to use hypnosis unless they fulfill adequately the requirements of training, skill, aptitude, emotional stability and normal therapeutic intent.

For years prior to the discovery of anesthesia, minor and some major operations were performed under mental anesthesia alone. Occasionally even now, one hears of all types of operations being carried out under hypnosis. While a few

may have been done for acceptable reasons, more, however, are carried out only to feed the hypnotist's need for the dramatic, since better anesthetics than hypnosis are available for the average case. The use of hypnosis to allay anxiety and apprehension and to relax the patient before operation or manipulation, may be more acceptable. The term "hypnodontia" is appearing more frequently in the dental literature in recent years (46). It is creating considerable discussion and misunderstanding. It should be well understood and emphasized here that, while it is easy to learn the technique of hypnotizing a patient, its safe and therapeutically successful use is altogether another story. It must be stressed that hypnosis of itself is not a therapeutic agent nor a therapeutic technique. Patients with surgical disease are treated (i.e., operated upon) not *by* but *under* anesthesia; and likewise, patients with emotional disease can be treated psychotherapeutically not *by* but *under* hypnosis (47).

While those dentists who use hypnosis use it mainly to reduce anxiety and to relax the patient and only occasionally to produce anesthesia, nevertheless, a working knowledge of all aspects of hypnosis is necessary. Just as a surgeon who opens up an abdomen must be prepared to meet any surgical eventuality to be found there, so must the individual who uses hypnosis be prepared for any untoward manifestations of hypnosis which may appear with its use. The induction of hypnosis varies with each individual and a description of the technique used cannot be undertaken in this presentation. Suffice it to mention, however, that in order to use hypnosis scientifically and successfully, it requires training in the psychodynamics of human behaviour since it is primarily a human situation involving a delicate interplay of human strivings. It consists of an especially intense transference relationship (48). Hypnosis thus constitutes a tool which may be used in many ways and with great flexibility but only as determined by its relevance to the

therapeutic problem and as an adjuvant to comprehensive psychotherapy. While with the use of the gas machines and intravenous anesthesia, it requires only a moment or two of reassurance before the anesthesia is started, in psycho-anesthesia a much longer discussion preliminary to the induction of hypnosis is prerequisite.

Psycho-anesthesia (hypnosis for anesthesia) in contrast to chemo-anesthesia, does not block off painful stimuli to the brain. Under hypnosis, very painful or prolonged stimuli may not produce verbal complaints, facial flinch, withdrawal of the part or change in respiration, only because these functions are at least partly under voluntary control (49). It has been demonstrated that these patients do show changes in those functions which are less under voluntary control. The further one gets from the volitional function, the smaller the effect of hypnotic suggestion.

Following short minor surgical procedures such as dental extractions or the incision of an abscess, there is not much observable shock whether hypnosis is used or not. Following more serious and prolonged surgical procedures under hypnosis, surgical shock may be demonstrated. Some authors are strong in their denial of this eventuality (50). The evidence of shock and postoperative discomfort may be masked by the post-hypnotic suggestion which is usually given during the operation. While the patient may have no memory of pain following any of these procedures, when re-hypnotized at a later date, he can usually recall the site of pain and describe accurately the pain experienced though not expressed at the time of operation. Any amnesia present is the result of suggestion and not due to lack of sensation. This, of course, is not the case where chemo-anesthesia is used.

One of the chief objections to psycho-anesthesia is the difficulty and uncertainty of producing the necessary degree of hypnosis. This is true especially in compulsive obsessive personalities. Often the trance does not become deep enough for

relaxation or for the production of adequate anesthesia. There are some individuals whose personality make-up is such that it is wise not to increase the transference between the patient and dentist which is an essential of hypnosis. Certain personality trends or disorders suggest an avoidance of this close relationship. And lastly, there is the ever-present prejudice against hypnosis itself.

As against these disadvantages, there are certain benefits in the use of psychoanalysis compared to chemo-anesthesia. Once deep hypnosis, resulting in a satisfactory relaxation or anesthesia, is obtained, it can be re-induced at any time providing the patient-physician relationship has not altered basically in the meanwhile. Re-induction of hypnosis under these conditions is only a matter of a minute or two. In good subjects, hypnosis may be re-induced by another dentist who has been placed "en rapport" with the patient by the original therapist. Psycho-anesthesia can be a pleasant experience without the usual nervous tension associated with chemo-anesthesia. It may be maintained for long periods of time without toxicity and can be terminated at will. Post-operative nausea and retching may be kept at a minimum. Because of all this, healing may progress more rapidly.

From the psychosomatic viewpoint, it would seem that the ideal anesthetic should be a "balanced" one. "Balanced anesthesia" for the anesthesiologist, represents a combination of anesthetic agents in combination or in sequence. This combination attempts to produce a more satisfactory anesthesia than can be obtained with a single agent alone. It is possible that a "balanced anesthesia" in the broadest sense should include the use of suggestion or hypnosis in combination with a chemical agent. Such a combination has proved to be very satisfactory. In almost all cases where this method was used, the quantity of the anesthetic agent was diminished twenty-five to eighty-five percent.

The most forceful method of allaying

anxiety without recourse to medication is in the use of hypnosis. Hypnosis, however, covers an extremely broad field and its use in dentistry is restricted to only two minor facets of this many-faceted instrument; mainly to allay apprehension and anxiety, and occasionally to produce anaesthesia. Broader use of hypnosis by the average dentist may lead to difficulties. Hypnosis may be likened to a psychological scalpel which is used to cut through the patient's conscious and unconscious resistances. It may then be utilized as a psychological microscope to bring into clear focus psychologic material which otherwise might appear hazy and disconnected. One might then use it as a psychological curette to remove "debris" and to channel emotions more normally into the mainstream of the personality. Finally, it may be used as an absorbable psychological suture to hold together suggestions made during the treatment. One must, however, be as adept with this type of scalpel as the surgeon is with his; no less trained in the use of this type of microscope than is the pathologist in the use of the optical microscope; otherwise, failure and damage may ensue.

A further word of caution is necessary since it has not been stressed in the literature, and that is, while the careful dentist may use hypnosis only to allay anxiety, the procedure may produce all sorts of random manifestations, but more importantly still, it may release pent-up emotions which, up to that time, had been held in balance. It is most wise to have adequate training in this field before using it. In capable hands it can have a very salutary effect on the patient.

Hypnosis has been in its ascendancy during the past two decades. The Society for Clinical and Experimental Hypnosis was founded in 1949 (51). Membership is limited by the high professional standards based on general requirements patterned after the American Medical Specialty Boards, the American Psychological Association, with the added specific re-

quirements regarding the calibre of hypnosis work and published research. The publication of the journal of Clinical and Experimental Hypnosis is a direct outgrowth of the development and activity of this Society. As a result of this combination, the quality and significance of contemporary hypnosis work and research has reached a level of productivity probably never before obtained. Scientific hypnosis today is capable of standing on its own objective merits in relation to criteria of methodology, significance, usefulness, productivity and the capacity for permitting workers in the behaviour sciences to move toward a more holistic frame of reference. (52). That most of the research in this field is now done within the framework of university settings, bodes well for its acceptance. While it would appear, at times, that in the matter of "dental psychosomatics" and "hypnodontia", tender-minded scientists are in the ascendancy and have done much to retard the acceptance of the principles involved, nevertheless, the future of psychotherapy in dentistry, skilfully applied, appears to be bright and fruitful.

SUMMARY

To use the psychosomatic approach successfully in dentistry, much more training in the understanding of the deep-seated and recalcitrant dysfunctions and extremely rigid psychological defenses

used, is needed, than is generally supposed.

The dynamic forces of the various components making up the psychosomatic concept: somatic, psychic, social, cultural, and anthropological, are discussed. Effects of emotional stress on the mouth and its functions is delineated by descriptions of the various psychosomatic conditions met with in this area. These are: developmental abnormalities, neurotic eating habits, rampant decay in adolescence, fingernail biting, bruxism, gingivitis, chemical and quantitative changes in salivary secretion and gagging.

Anesthesia from the dental point of view is of considerable importance and interest. The emotional aspects of this type of anesthesia differs considerably from anesthesia as used in general surgery. The mechanism of anxiety, apprehension and fear in the dental patient is evaluated briefly. The usual means for allaying anxiety in the patient is reviewed. Mention is made of the dentist's own anxiety and its causation.

The use of hypnosis for allaying anxiety and fear in the dental patient and occasionally for the production of local anesthesia, is a very controversial subject. This situation is the result of the use of hypnosis by inept, untrained, unskilled, emotionally sick and poorly motivated individuals. An attempt has been made to clarify this problem. The future of psychotherapy in dentistry, skilfully applied, appears to be bright and fruitful.

REFERENCES

1. Ryan, B. S.: *Psycho-biologic Foundations in Dentistry*. Springfield, Ill., Charles C. Thomas, 1946.
2. Campbell, D. G.: Psychosomatic mechanism in oral disease. *Amer. J. Orthodontics*, July, 1945.
3. Stolzenberg, J.: *Psychosomatics and Suggestion Therapy in Dentistry*. New York, Philosophical Library, Inc. 1950.
4. Roth, H., and Stone, A.: Psychosomatic and nutritional factors related to recurrent necrotizing gingivitis. *J.A.D.A.* 42:474-475, 1951.
5. Raginsky, B. B.: *L'approche psychosomatique en art dentaire*. J. Can. Dent. Assoc., 18:669-678, 1952.
6. Raginsky, B. B.: *Psychosomatic Medicine. Its history, development and teaching*. *Amer. J. Med.*, 5:857-878, 1948.
7. Raginsky, B. B.: The dentist as a person. *J. Can. Dent. Assoc.* In press.
8. Grinker, R. R.: *Psychosomatic Research*. New York, W. W. Norton & Company, 1953.
9. Halliday, J. L.: Significance of "the concept of a psychosomatic affection". *Psychosom. Med.* 7:240-245, 1945.
10. Binger, C.: On so-called psychogenic influences in essential hypertension. *Psychosom. Med.* 13:273, 1951.
11. Gregory, W. K.: *Our Face from Fish to Man*. New York, Putnam, 1929.
12. Keith, A., and Camplon, G.: A contribution to the mechanism of growth of the human face. *Dental Record*, 42:61, 365, 1922.
13. Katz, D.: *Gestalt Psychology*. New York, Ronald Press, 1950.
14. Grinker, R. R.: *Psychosomatic Research*, New York, W. W. Norton & Co., p. 111, 1953.

15. Pendelton, E. C.: Anatomy of the face and mouth from the standpoint of the denture prosthodontist. *J.A.D.* 33:219, 1946.
16. Manhold, J. H., and Manhold, V. W.: A preliminary report on the study of the relationship of psychosomatics to oral conditions. *Science*, 110:585, 1949.
17. Chavoor, A. G.: Psychosomatic factors in oral disease. *Bull. U.S. Army Med. Dept.* 9:987, 1949.
18. Kaufman, W.: Self-inflicted, food-induced allergic illness. *Ann. Allergy*, 10:308-323, 1952.
19. Schuntermann, C. E.: Absorption ability of the mucosa of the mouth. *Zeitschr. f.d. ges. exper. Med.*, 87:259, 1933.
20. Miller, S. C., and Firestone, J. M.: Psychosomatic factors in the etiology of periodontal disease. *Am. J. Orthod. & Oral Surg.* 33:675-686, 1947.
21. Binger, C.: Personality and oral disease.
22. Ross, G. L., Bentley, H. J., and Green, G. W.: The psychosomatic concept in dentistry. *Psychosom. Med.* 15:163-173, 1953.
23. Briggs, E. F.: The psychogenic factors in dental caries. *Dental Digest*, 50:115, 1944.
24. Rich, G. J.: Body acidity as related to emotional excitability. *Arch. Neur. & Psychiat.* 20:589, 1928.
25. Raginsky, B. B.: Some psychosomatic aspects of general anesthesia. *Anesthesiology*, 11:391-408, 1950.
26. Crampton, H. P.: Factors, other than anesthetics, affecting anesthesia. *Proc. Roy. Soc. Med.*, 28:91-96, 1934.
27. Raginsky, B. B.: Hypnosis in Internal Medicine. In: *Hypnosis in Modern Medicine* (J. M. Schneck, Ed.), Springfield, Ill., Charles C. Thomas, 28-60, 1953.
28. Raginsky, B. B.: Mental suggestion as an aid in anesthesia. *Anesthesiology*, 9:472-480, 1948.
29. Raginsky, B. B.: Hypnotism and its relation to anesthesia. *J. Connecticut Med. Soc.*, 2:1-4, 1938.
30. Raginsky, B. B.: The use of hypnosis in anesthesiology. *Personality Symposia on Topical Issues*, 1:340-349, 1951.
31. Raginsky, B. B.: Mentalni sugesce v. anesthesii. *Prague, Casopis Ceskych mediku*, 10:3-6, 1947.
32. Raginsky, B. B.: Relaxation and the teacher. *Educational Record*, 66:8-14, 1950.
33. Jackson, K.: Psychologic preparation as a method of reducing the emotional trauma of anesthesia in children. *Anesthesiology*, 12:293-300, 1951.
34. Douglas, B. L.: The use of a wire recorder in anesthesia. *Anesth. & Analg.*, 32:71-72, 1953.
35. Stanfield, C. E.: Psychotherapy: an orientation for non-psychiatrists. *Am. J. Med. Sci.*, 216:97-113.
36. Weiss, E.: Psychotherapy in everyday practice. *J.A.M.A.*, 136:442-447, 1948.
37. Ziskind, E.: Training in psychotherapy for all physicians. *J.A.M.A.*, 147:1223-1225, 1951.
38. Whitehorn, J. C.: Basic psychiatry in medical practice. *J.A.M.A.*, 148:329-334, 1952.
39. Wolff, H. G.: Protective reaction patterns and disease. *Ann. Int. Med.*, 27:944-969, 1947.
40. Masserman, J. H.: *Dynamic Psychiatry*. Philadelphia, W. B. Saunders Company, p. 30, 1946.
41. Wolff, H. G., and Goodell, H.: The Relation of Attitude and Suggestion to the Perception of the Reaction to Pain. In: *Pain: Res. Publ. Ass. Res. Nerv. & Men. Dis.*, Baltimore, Williams and Wilkins, 1943.
42. Malmö, R. B., and Shagass, C.: Physiologic studies of reaction to stress in anxiety and early schizophrenia. *Psychosom. Med.*, 11:9, 1949.
43. Hoch, P. H.: Biological aspects of anxiety. In: *Anxiety*, New York, Grune & Stratton, 1950, p. 107.
44. Editorial: Hypnosis in dentistry is extremely impractical. *J. Am. Dent. Assoc.* 40:590, 1950.
45. Rosen, H.: The dangerous use of hypnosis by the unskilled, inept, untrained, or emotionally sick. Presented before the 1953 annual meeting of the Society for Clinical and Experimental Hypnosis, New York City.
46. Moss, A. A.: *Hypnodontics, or Hypnosis in Dentistry*. Brooklyn, N.Y. Dental Items of Interest Publishing Co., 1952.
47. Rosen, H.: The hypnotic and hypnotherapeutic unmasking, intensification, and recognition of an emotion. *Amer. Jour. Psychiat.*, 109:120-127, 1952.
48. Breman, M., and Knight, R. P.: A note on the indications for the use of hypnosis in psychotherapy: an illustrative case report. *Bull. Menninger Clin.* 12:49, 1948.
49. Sears, R. R.: An experimental study of hypnotic anesthesia. *Jour. Exper. Psychol.* 15:1, 1932.
50. Bramwell, J. M.: *Hypnotism*. London, William Rider & Son Ltd., 1921, ed.3.
51. Schneck, J. M.: An outline of the development of the Society for Clinical and Experimental Hypnosis. *Jour. Clin. & Exper. Hyp.*, 1:2, 1953.
52. Kline, M. V.: Editorial note. *Jour. Clin. & Exper. Hyp.*, 1:1, 1953.

Hypertrophy

by C. D. NEWBY, D.D.S., Kelowna, B.C.

— A case report —

PATIENT:

Girl, age 5½ years.

CLINICAL PICTURE:

The greatest amount of gum coverage was in the anterior region of both arches. In this area just the incisal tips of the teeth were showing although both arches showed a full complement of teeth in fairly good alignment, with no caries, present anywhere.

INTRODUCTION:

In 1938, I had occasion to operate on this child's father, who was at that time a young man of 19, for an almost identical condition, save that in the case of the child, it was necessary to retain the teeth intact, whilst in the case of the father, the permanent teeth were removed, together with the hypertrophied gum tissue and the ridges prepared for dentures. This case was written up and appeared in the April issue of the *Canadian Dental Journal* in 1940.

There are two children in the family, the younger child as yet has a normal



FIGURE 1

mouth condition. The one in question, first showed signs of hypertrophy two years ago and the parents were most anxious that the condition be rectified before the child went to school. Accordingly, the child was hospitalized and operated upon on April 21, 1954.

Dr. Bruce Moir of Kelowna was the attending anesthetist and Miss W. Greig the assisting nurse. The latter was the assisting nurse when we operated on the child's father in 1938.

The anesthetic used was ether. Both arches were done concurrently, the upper first as a matter of choice.

A set of Dr. Ward's periodontal instruments were used to good advantage. Apart from that, and an ordinary scalpel, a bone file, and a pair of surgical scissors were all that were necessary.

PROCEDURE:

The hypertrophied tissue was excised in sections and scraped down to the al-

veolar process. In order to ensure complete removal and to minimize the possibility of recurrence the gingival portion was similarly scraped and likewise the interdental spaces. In this, Dr. Ward's little saw proved to be an ideal instrument. When both arches were done, a full complement of deciduous teeth were exposed. No surgical dressings were used and no stitching was required as there was literally nothing left to stitch.

Naturally, the patient was left on a liquid diet for quite sometime and, retained in the hospital under observation for three days and then dismissed with instructions to report at the office in a month's time.

RESULT:

When the child returned at the end of a month's time, impressions were taken as a matter of record. Impressions also preceded the operation. Casts before and after were photographed and appear



FIGURE 2

herein for your observation. See Figs. 1 and 2.

Normal gum tissue now completely covers all operated areas. The child and the parents are quite happy with the results and the writer extremely gratified.

As to whether this tissue will regenerate, only time will tell, but the surgery employed was radical enough in the opinion of the writer to outlast the normal life expectancy of the deciduous teeth at least.

MICROSCOPICALLY:

Hypertrophied gum tissue presents a picture of delicate wavy bundles of fibrous tissue interspersed with areas of

myxomatous degeneration. The mucous is practically normal save for a slight increase in the number of round cells. The tissue itself is tough and calloused offering little or no discomfort to the patient in mastication.

AETIOLOGY:

Cases of hypertrophy are so rare that little is known of its actual aetiology. Dental literature merely suggests that it is basically due to a nutritional disturbance, due in turn to a glandular disfunction associated with an hereditary perversion. The fact that the child's father was so afflicted and the father's aunt before him, points to the conclusion, that hereditary factors prevail throughout.

A chemical solution intended to prevent the formation of salivary calculus (Ex 347) was tested in thirty-one patients who ordinarily were subject to heavy tartar formation in a relatively short period of time — three to four months in most cases. The solution tested apparently prevented the development of tartar or reduced its formation markedly in nineteen cases; slight reduction was apparent in eight cases; no reduction was observed in one case; three patients discontinued the use of the solution because of various reasons.

Louis I. Grossman, D.D.S., Oral Surgery, Oral Medicine and Oral Pathology.

ABSTRACTS

Ultrasonic Cavity Preparation.

by CARL R. OMAN, D.D.S., and EDMUND APPLEBAUM, D.D.S.

New York State Dental Journal, June-July 1954.

Ultrasound has been successfully used for drilling in industry. The patented "Cavitron" process converts high frequency electrical energy into high frequency mechanical energy in the form of rapid vibrations. The cutting tool vibrates about 29,000 times a second with an amplitude of about 0.001 inch. An abrasive in a liquid carrier is washed across the vibrating tool. The ultrasonic tool delivers the high frequency motion to the abrasive which transmits it to the material to be cut.

In November 1952, cavities were first prepared in extracted teeth with the "Cavitron" ultrasonic industrial machine. This cut tooth structure very rapidly. A year later, a generator was designed with a special handpiece for dental opera-

tions. With this modified device, several cavities were prepared in extracted teeth. Then, to study the biologic effects of such drilling on the dental pulp of experimental animals, cavities were prepared in the teeth of a chimpanzee and a dog. These animals were sacrificed and the teeth extracted and prepared for histologic examination. Finally, several cavities were prepared for dental patients, and pulp tests were made before and after the operation.

Figure 1 is a block diagram of this mechanism. It consists of a variable frequency (electron-tube) oscillator which feeds a high frequency alternating current to the magnetostrictive handpiece through a power amplifier. At the same time, D.C. polarizing current is fed to the magnetostrictive handpiece so that the vibration of the handpiece follows the frequency of the alternating current.

E. C. Gregg states, "The phenomenon of magnetostriction (of the Joule effect) is the change in length of a rod or tube

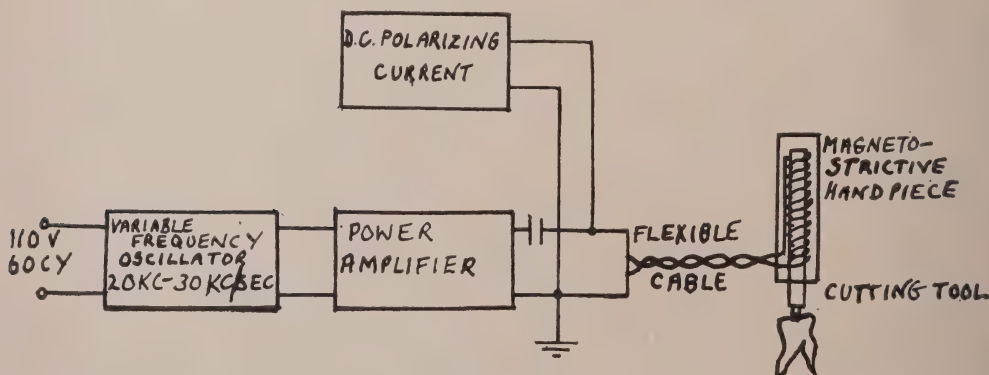


FIG. 1. Block diagram of ultrasonic mechanism.

of ferromagnetic material when it is introduced into a magnetic field parallel to its length. This change in length, like most magnetic phenomena, is reversible. Hence, if an initially unmagnetized rod of ferromagnetic material is brought into an alternating magnetic field, it will contract and expand with twice the frequency of the field, and if the rod is initially magnetized, it will vibrate with the same frequency as the field". In this ultrasonic dental apparatus the hand-piece houses a magnetostrictive element which vibrates at 30,000 times per second. It is the rapid vibratory motion of the element that in turn produces the vibration of the dental tool which in turn transmits efficient cutting action to the abrasive liquid mixture in contact with the tooth.

Several teeth of a chimpanzee and a dog were prepared for cavities to compare the effects on the pulp of rotary burs, "Airbrasive Technique", and ultrasonic technique. Proper histologic processing of these teeth — embedding in celloidin—will take some time. But a preliminary examination of several sections of pulps of the experimental animals indicate no difference in the pulps of those teeth cut by ultrasonics and those cut by conventional dental burs. A full report of histologic study of the treated and untreated dental pulps and the supporting tissues of the teeth will be made at a future date.

The cavity preparation for patients has been clinically successful.

Mr. K.—Occlusal cavity, upper left first bicuspid was opened with rectangular ultrasonic tool, cavity shaped and temporary filling placed. On second visit, cavity was reopened and preparation completed with ultrasonic tool. No pain was experienced on either visit although the tooth was originally sensitive to cold, heat and scraping with hand instruments. Since the cavity was filled with amalgam in the usual manner, the tooth has remained vital and comfortable.

Mr. B.—Mesial cavity in upper left cuspid was opened with round ultrasonic instrument, shape and size of No. 556 fissure bur. No pain was felt on contact with dentin of open cavity nor when drilling through dento-enamel junction. Cavity was temporarily filled, no subsequent reaction was noticed—tooth has remained vital.

Miss H.—Mesio-occlusal cavity was prepared in lower right second bicuspid with ultrasonic tool bent at right angles to simulate action of a conventional contra angle. The width of the tool corresponded to the proximal width of the finished cavity preparation. The depth of the cut was easily controlled by gauging the amount of tool visible above the occlusal surface and by tactile sense. No pain whatever was experienced by the patient and the vibration of the instrument was described as "soothing". The patient expressed reluctance to have any further cutting done with the conventional rotating dental drill.

Dr. B. (a dentist).—Cavity due to abrasion on incisal surface of lower left cuspid was extremely sensitive to touch, heat, cold,—comparable to a gingival erosion. The cavity was prepared with a rectangular tool about 2 mm. x 1 mm. in about 50 seconds. No pain was experienced with the ultrasonic tool.

In addition, in order to study the psychological reaction on the part of patients, eleven of our colleagues and associates were invited to experience contact of this tool with the tooth. No attempt was made to drill tooth structure. The universal opinion was that the sensation of vibration or annoyance was practically absent.

The technique of cavity preparation by ultrasonics is comparable to that by the conventional dental engine or drill. Slight pressure is maintained between the tool and the surface to be cut. Thus the dentist maintains tactile control of the apparatus during the cutting operation. The cutting process is cool provided a liquid suspension of abrasive

material is interposed between the end of the tool and the tooth. Clinical work on several patients demonstrated that pain was absent during cavity preparation.

Because of the possibility of making cuts of predetermined shapes and sizes, the application of this ultrasonic method to the cutting of dental tissues has extremely interesting potential. Eventually it may be possible to cut tooth structure ultrasonically with a small dental

handpiece, just as effectively as can be done with large scale industrial ultrasonic equipment.

As previously mentioned, the ultrasonic cutting process is cool provided a liquid and abrasive are used. Theoretically, the tool without liquid might be employed for generating heat in root canal therapy—where a dry canal is so desirable prior to filling. No work has been done as yet on this problem.

Effect of Fluoride in Drinking Water.

by H. BERTON McCauley, D.D.S., and F. J. McClure, Ph.D.

Public Health Report, July 1954.

Exposure to fluoride in drinking water was studied for evidence of detrimental effects on skeletal calcification and bone development in children. Three groups of children aged 7 through 14 years, living in Lubbock and Amarillo, Tex., and Cumberland, Md., were selected on the basis of continuous exposure to their communal drinking waters, which contained fluoride in the amounts of 3.5 to

4.5 p.p.m. F., 3.3 to 6.2 p.p.m. F., and 0.1 p.p.m. F., respectively. Radiographs were taken of the right hand and wrist of 2,050 children. From these X-rays the skeletal age was assessed and a quantitative index of ossification was determined.

No evidence, available by radiographs, was obtained which would indicate that there was any adverse effect on the carpal bones or on their growth and development as a consequence of the continuous use of drinking water containing approximately 3.5 to 6.2 p.p.m. F. These results confirm the safety of maintaining the fluoride level of public water supplies at about 1.0 p.p.m. F., by controlled fluoridation, for the reduction of tooth decay.

Some important considerations in the mixing of silver amalgam.

by JOHN H. MOSTELLER, D.D.S., Mobile, Ala.

Journal of the Ohio State Dental Association, May 1954.

The ratio of alloy to mercury recommended by the manufacturer of the particular alloy in use should be strictly

adhered to. If less mercury is used the working plasticity of the material is invalidated and the filling will corrode due to the scabrous surface formed by the many unamalgamated particles which the mercury fails to coat. While no benefits are to be derived from using an excess of mercury, evidently no particular harm is done in doing so provided all the excess is removed from the amal-

gamated mass before and during condensation. The deleterious results of excess mercury in an amalgam restoration are decreased crushing strength, hardness and resistance to tarnish and increased flow and expansion.

A mix of alloy and mercury that is undertritured will expand excessively and have weak compression strength.

Approximately 90 per cent of total flow occurs during the first 8 hours in the laboratory under a static load. In the mouth if there is no load during this period it seems that no flow would exist. Flow is reduced as packing pressure is increased up to about 8,000 pounds per square inch. It is obvious that correct heavy condensation and avoidance of direct masticating forces on a fresh restoration for several hours will void, for all practical purposes, the dangers of flow regardless of the manipulation of the material, within reasonable limits.

Amalgam that is overtritured may fail to expand the 3 microns per centimeter minimum required by A.D.A. Specification No. 1 or may actually contract slightly.

The theory of this required slight expansion is based on the difference between the linear thermal expansions of amalgam and dentine with the idea that the slight expansion of the material in the cavity during the setting will compensate for the slightly greater contraction of the restoration when the tooth is submitted to cold drinks or foods. This appears of academic interest, only, for several investigators have reported an inability to demonstrate contraction clinically.

About 10 microns per centimeter is the maximum contraction that can be obtained with an alloy that meets A.D.A. specifications, regardless of the mixing time. Clinical observation for 3 years at the University of Indiana of amalgam restorations fabricated from a special formula alloy which contracted over 30 microns per centimeter in the laboratory under the same manipulation in the

clinic failed to demonstrate a single failure due to shrinkage of the material. The ditch that is frequently seen around amalgam fillings and that is believed to be caused by contraction of the amalgam is usually caused by poor condensation and adaptation of the amalgam, the pooling of free mercury at the margins, or the fracture of a feather edge amalgam margin.

Surveys of amalgam failures have revealed many due to excessive expansion. Increased crushing strength was obtained by more thorough mixing than recommended by the manufacturers but a slight contraction occurs. It is evident, however, that shrinkage of amalgam is not a clinical problem while the avoidance of excess expansion definitely is. A more thorough mixing is therefore advocated by the manufacturers which will not only preclude any opportunity for undermixing with its attending disastrous results but will also yield a slightly stronger filling than that developed when the material is mixed according to the manufacturer's direction. Restorations engineered from more thoroughly mixed amalgam not only are slightly stronger but also appear to have smoother surfaces, polish easier, and maintain a polish better than those fillings built with material either under-mixed or mixed according to the manufacturer's directions.

It is possible for the careful operator to obtain a good thorough mix with either the mortar and pestle or the rubber thumb stall technique; however, consistently good mixes can be more easily obtained with a mechanical amalgamator that has a time interval regulator. Condensation should be carried out with dispatch and amalgam over three minutes old should be discarded and another mix made. It is never permissible to remix or add mercury to partially crystallized amalgam in order to regain working plasticity, but a slight mulling of the material in a clean piece of rubber dam is not objectionable.

Some Viewpoints on Extraction

by ROBERT B. WHITE, D.M.D., Florence, Ala.

American Journal of Orthodontics, July 1954.

"Give us the courage to accept with equanimity the things in life which cannot be altered. Give us the strength to alter those things which can and should be altered, and give us the wisdom to distinguish between the two."

To the majority of orthodontists, extraction of teeth is accepted as an adjunct to good orthodontic therapy in a sizeable percentage of malocclusions that are presented for treatment.

The primary consideration in treating malocclusions is to restore the mouth to the maximum in efficiency, longevity, harmony, beauty, and stability.

These maximal qualities, when achieved through orthodontic therapy, then would exemplify an occlusion most normal for any individual, regardless of the ultimate number of teeth remaining in the mouth.

The decision to extract teeth for the individual case is based upon the following:

- a) The findings in careful analysis and diagnosis; particularly with evaluations of (1) growth pattern; (2) growth trend; (3) relation of the bony bases to the cranial base; (4) relation of the bases to each other; (5) relation of the axial inclination of teeth to the facial plane in horizontal linear measurement; (7) positions and relations of the individual teeth and to each other; (8) size of teeth and jaws; (9) spacing, crowding, lack of teeth, or superfluity of teeth; and (10) vertical height, and free-way space.
- (b) The plans for treatment of the individual case, which should be taken into consideration, are: (1) the limitation of the particular case as determined in the analysis; (2) the choice of teeth that are to be extracted; and (3) the necessity for proper positioning and aligning of the remaining teeth, and closure of all spaces if the limitations permit.

Thorough analysis and diagnosis, and treatment planning, can be most efficacious through the use of cephalometric radiography in conjunction with casts, photographs, and intraoral films.

Disorders of the temporomandibular joint

by GOSTA LINDBLOM, D.D.S., Stockholm, Sweden.

Journal of the American Dental Association, July 1954.

If bite analysis and roentgenograms indicate that the arthrosis of the temporomandibular joint is caused by incorrect cuspal guidance of the mandible, either laterally or sagittally, and these conditions are corrected, a disappearance of the disorder may be expected and a permanent cure realized.

In those cases where no definite dental origin can be established but where neuralgic symptoms are dominant, no improvement can be expected from den-

tal therapy. Symptomatic heat treatment and rest may yield satisfactory results in such cases, although a radical neurosurgical approach may be required for certain cases if the patient is to be relieved of what frequently is severe pain.

For those cases where a dental origin can be established with certainty, three possible modes of treatment should be considered:

1. The mandible may be returned to its correct central position by spot grinding—existing obstructions to gliding are removed and smooth articulation is obtained.
2. If at the same time the bite requires reconstruction, it may be effected with

permanent prosthetic appliances—fixed or removable—or a combination of the two types.

Both these alternatives can be expected to yield lasting results.

3. The third possibility is to bring the mandible into the correct position by the use of temporary splints alone, and

to retain it in place until such time as the symptoms have disappeared. Because of the selective nature of the series of cases, such treatment was resorted to only in exceptional cases. Furthermore, it was only applied in cases where it was certain from the beginning whether dental therapy had any chance of success.

Effects of air-borne fluorides on children living on Sauvie Island.

by BHIM SEN SAVARA, B.D.S., L.D.S.; HAROLD JUDD NOYES, M.D., D.D.S. and THEODORE SUHER, D.M.D., M.S., Portland, Oregon.

Journal of the American Dental Association, July 1954.

Investigators had reported that buckwheat plants and flowers grown in certain parts of Sauvie Island in Oregon were being damaged by excessive quantities of fluorides. Preliminary observations made in the present study indicated that the majority of the people living on the island were constantly consuming locally raised vegetables and locally produced meat. McClure in 1943 suggested that the direct addition of a fluoride supplement to children's diet during the formative life of the teeth reduces incidence of dental decay. There were, therefore, three criteria of the effects and thus indirectly of the presence of fluorides in the systems of the children: (1) a reduction in the incidence of dental caries, (2) the presence of mottled teeth and (3) bone changes.

Visual examination of the teeth of the Sauvie Island children revealed no evidence of mottling. Ratios of dental caries were extremely high in comparison with those for Hagerstown children but compared favorably with those for

Oregon children reported by Hadjimarinos. These results indicate that the daily intake of fluorides of the children was so low that it did not cause mottling of the teeth nor alter the incidence of dental caries.

Further evidence provided by intra-oral roentgenograms showed slightly accelerated calcification and eruption of the permanent teeth. Histological examination of a number of teeth revealed no defects in the calcification of the enamel.

According to the plotting of their weights on Meredith's chart and Wetzel's grid, the children were somewhat above average in weight. Meredith in 1951 had found that children born and reared in Oregon are heavier, taller and larger in body measurements than children in many other parts of the United States. It is possible that the slight acceleration in calcification and eruption may have been due to healthier surroundings. Roentgenograms of the long bones did not reveal any alteration in calcification.

The findings and observations of this study indicate, therefore, that the children of Sauvie Island showed no symptoms—determinable by the methods used—of having consumed excessive fluorides in the past few years, notwithstanding the fact that the presence of fluorides in the atmosphere is alleged to have caused damage to the cattle and vegetation.

The use of acrylic resin for crowns and bridges, especially in combination with gold and properly protected by it, affords durable restorations with impact strength. It is easy to finish, polish, and repair. Manipulation of shape and colour is limited only by the conditions in the mouth and the skill of the technician. Acrylic resin is biologically compatible with the oral tissues, and when it is properly processed it is impermeable to bacteria.

Mortimer C. Davis, D.D.S. and George Klein.
Journal of Prosthetic Dentistry, July 1954.

RESEARCH

FOREFRONT OF CANADIAN DENTISTRY

The Effect of Estrogen on the Gingiva and Alveolar Bone of Molars in Rats and Mice.

by A. G. NUTLAY, Department of Pathology, Dalhousie University, Halifax, N.S., S. N. BHASKAR, J. P. WEINMANN and A. M. BUDY, Departments of Oral Pathology and Histology, University of Illinois College of Dentistry, and the Department of Physiology, University of Chicago, Chicago, Ill.

Journal of Dental Research, 33(1):115-127. Feb. 1954.

This study is based on a radiographic and histologic analysis of the teeth, alveolar process, gingival epithelium, and epithelial attachment of groups of young rats, young mice and old mice.

Sixteen newborn rats were divided into two groups, eight animals being used as controls and eight animals receiving a total of 0.05 to 1.30 mg. of a-estradiol benzoate. Animals were sacrificed from five to forty-two days after the start of the experiments.

Twenty-two newborn mice were divided into three groups, eight animals being used as controls, six being given a total of 0.05 to 0.80 mg. of diethylstilbestrol and sacrificed at from 5 to 30 days of age, and eight mice receiving a total dosage of 0.05 to 1.30 mg. of a-estradiol benzoate and being sacrificed from 5 to 40 days of age.

Thirty-two 1-year-old mice were divided into three groups, six mice being used as

controls, nine mice receiving a subcutaneous pellet of 2.0 mg. of crystalline a-estradiol benzoate and being sacrificed from one to thirteen weeks after the start of experiment, and eight mice receiving a total of 1.5 to 6.0 mg. of a-estradiol benzoate and being sacrificed from three to twelve weeks after the start of the experiments.

This investigation showed that:

1. The administration of estrogens did not lead to any changes in the teeth, alveolar process, gingival epithelium, or the epithelial attachment of the young rats.

2. In the newborn mice which received from 0.80 to 1.30 mg. of diethylstilbestrol or a-estradiol benzoate over a period of more than twenty-five days, there was a replacement of hemopoietic marrow of the alveolar process by a fibrous marrow and the marrow spaces were reduced in size by new bone formation.

3. In old mice which received injections or subcutaneous pellets of a-estradiol benzoate, there was an increased downgrowth of epithelial attachment along the root surface and into the bifurcation of roots. The gingival epithelium of the interdental papilla between the first and second molars also proliferated in an almost tumor-like fashion. The interdental papilla lost its conical shape and became progressively blunted and concave. In the final stages of the experiment there were deep interdental and interradi- cular pockets which then led to a marked resorption of the interdental and inter-radi- cular bony septa. The root surfaces showed many areas of resorption. The earliest of these changes were noted three weeks after the beginning of the experiment and they became progressively marked.

A preliminary study to determine whether a correlation exists between the dietary habits and the dentitions of elderly persons

by J. H. DOUGHTY, B.Com., M.A., Director, Division of Vital Statistics; DORIS NOBLE, B.Sc.(H.Ec.), C.P.H., Nutrition Consultant; F. McCOMBIE, L.D.S., R.C.S., D.D.P.H., Director, Division of Preventive Dentistry, and F. E. SCHROEDER, B.A., Research Assistant, all of the Department of Health and Welfare, British Columbia.

An attempt was made to carry out a pilot study to determine whether there was any indication of different food habits between edentulous persons and those persons with artificial dentures. The study was carried out amongst persons sixty-five years of age or over and in receipt of Social Assistance. Social workers obtained diet records covering a period of seven consecutive days from twenty-one

persons who were without teeth and from forty-four persons who used artificial dentures.

The number for whom it was possible to obtain diet records was considerably less than originally planned, and because of the smallness of the final sample only limited observations could be made. The study gave no appreciable indication that any significant difference exists in the dietary habits of edentulous and dentured persons. The food consumption in both groups was shown to be remarkably similar. The edentulous persons showed a somewhat poorer overall food consumption and a lower consumption of vegetables, particularly raw vegetables. However, since it is possible that these variations were due to chance alone no firm conclusions can be drawn from them.

The observations from this study conducted amongst elderly persons in British Columbia therefore tend to parallel those of the Sheffield study.

Sterilization of sharp instruments using a boiling emulsion of AC-10 oil

by HENRY THOMPSON, Department of Surgery, Faculty of Dentistry, University of Toronto.

It has been suggested that 2% AC-10 oil added to sodium bicarbonate solution prevents corrosion of sharp instruments during sterilization (Harvey et al, 1947, Foster et al, 1945). This study has investigated these claims and has tested the sterilizing efficacy of such a solution as compared to (A) 2% sodium carbonate (B) distilled water. Surgical blades were autoclaved in individual test tubes and then contaminated with (A) a culture of hemolytic staphylococci (B) a mixed culture of hay infusion (containing aerobic sporulating organisms) or (C) human saliva. Four blades were used in each

instance and in addition 4 control blades autoclaved but not contaminated. The blades were subsequently immersed in individual test-tubes of the test sterilizing solutions and boiled in a water bath for 10 minutes.

Blades were then transferred into heart infusion broth or thioglycollate broth and incubated for 96 hours. Both AC-10 solution and the sodium carbonate solution sterilized all the blades. Boiling water sterilized blades contaminated with staphylococci or saliva but not those contaminated with sporulating organisms.

Examination of blades after exposure to the test solutions indicates a high degree of protection against corrosion by the addition of AC-10 to the sodium carbonate solution. It is concluded that addition of AC-10 to sodium carbonate solution provides an emulsion satisfactory for sterilizing sharp instruments and protecting them against corrosion.

EDITORIAL

Science or Fanaticism — Our Nation's Choice

Occasionally events in other countries are of interest to the members of the Canadian dental profession because these occurrences may have a profound effect upon similar situations which could arise here. When one considers the aims and ideals of a profession it becomes apparent that there are no parochial boundaries which encompass developments, either scientific or political. Members of a profession in any specific location are not a group unto themselves, but are influenced for good or ill by the sum total of the efforts and experiences of their confreres wherever they may be.

Recently, in Washington, a three day hearing was conducted by the Committee on Interstate and Foreign Commerce of the House of Representatives upon a bill pending in Congress to prohibit fluoridation of public water supplies throughout the United States. This bill was introduced by Representative Roy W. Wier at the request of a limited number of people from his own city of Minneapolis, the city council of which, incidentally, has recently approved the fluoridation procedure for the community's water supply. While there is no question that the bill is in effect unconstitutional and there appears not the slightest hope for its approval, the hearings nevertheless constituted an opportunity for anti-fluoridation fanatics to hurl their baseless and unscientific charges in a national sphere similar to those which have been propounded at a local level.

The Wier Bill hearing was attended by an impressive array of scientific talent. The American Dental Association was represented by the chairman of its Council on Legislation and the secretaries of the Councils on Dental Research and Dental Therapeutics. The United States Public Health Service was represented by its chief dental officer, the senior scientist at the National Institute of Dental Research, and the chief of medical investigation at the same Institute. The views of the American Medical Association were heard as well as statements from the assistant director of the Kettering Laboratory in the College of Medicine, University of Cincinnati, and the professor and head of the department of physiological chemistry at the University of Minnesota Medical School. These experts reported at great length upon the efficacy, safety, and desirability of this public health procedure.

In opposition to the scientific group others appeared in favour of the bill to forbid the institution of fluoridation. For the first time the Christian Science denomination was openly recorded as against the fluoridation programme.

Three physicians appeared in opposition and a Leo Spira, M.D., of New York, said he came to the United States in 1951 "to help in the fight against chronic fluorine poisoning". Dr. Spira listed the usual aggregation of ailments attributed to fluorides, including "fits of depression", early baldness, and pyorrhea.

As usual a few members of the dental profession were present to give comfort to the anti-fluoridationists. It is interesting to follow the report of their "testimony". Dr. Max Ginns of Worcester, Mass., said that contrary to studies "in natural fluoride areas, tooth decay is just as prevalent as anywhere else". Charles T. Betts, of Toledo, said that "fluoridation does not prevent decay; it does just the opposite", and Paul Manning, of Springfield, Mass., deplored the existence of water fluoridation in Washington and in a hushed tone solemnly warned the congressmen, "don't soak your bodies in Washington

bath water, because if you do, the unalterable effects of fluoridation will come upon you. You will become violent". At this juncture, Dr. Betts rose and shouted "Senator Taft died after drinking this water for a year. Justice Vinson lies buried in Kentucky. Many senators and representatives have gone".

If the previous by-play had been witnessed upon a stage it would undoubtedly have had its humorous moments. It seems almost inconceivable that statements such as the foregoing could have been uttered by individuals with sufficient scientific acumen to be graduated from a school of dentistry. The fact remains, however, that the statements were made and were seized upon by anti-fluoridationists as evidence of professional and scientific disagreement.

It is difficult, if not impossible, to obtain complete unanimity of thought in respect to any scientific advancement. In the United States there are approximately 80,000 dentists in the American Dental Association, and in Canada about 5500 are members of the Canadian Dental Association. It would be extraordinary not to find some variation in views in a number so large.

A divergence of opinion, then, by a very small minority, is of no significance because this difference follows nothing more or less than normal human behaviour. What is of great significance, however, is the fact that there is no divergence by the Associations concerned.

Added to this is the vast amount of scientific endorsement by all the major health organizations on the continent. Among the latest agencies to support fluoridation is the Commission on Chronic Illness—an independent national agency founded by the American Hospital Association, American Medical Association, American Public Health Association, and the American Public Welfare Association, for the purpose of studying problems of chronic disease, illness and disability. After exhaustively studying all available evidence the Commission urges American communities to adopt fluoridation as a positive step in the prevention of the chronic disease, dental caries.

The recent action taken by the Canadian Medical Association endorsing fluoridation, without qualification, has given impetus to local requests for fluoridation. Many newspapers, which were previously hesitant, are now urging members of councils to take positive action to initiate this public health procedure.

There is a lesson to be learned from the Wier Bill hearings. Those opposed to fluoridation will go to almost any length in propounding untruths, thereby helping to deprive our people of a means of greatly reducing the incidence of a disease which affects almost all of them. It remains for each dentist in his own community to urge the adoption of fluoridation and for every local Dental Society to give leadership and render guidance to those upon whose authority and sanction the initiation of this procedure depends.

The Library

Additions:

- APPLEGATE, O. C.—Essentials of removable partial denture prosthesis. 1954. 323p. illus.
- KNAPP, K. W.—*Precis de bridges fixes*. 1953. 172p. illus.

- RHODES, R. E., ed.—*Curative hypnosis*. 1952. 274p.
- SKINNER, E. W.—*The science of dental materials*. 1954. 456p. illus.
- U.S. NAVAL DENTAL SCHOOL—*Handbook for general dental technicians*. 1952. 560p. illus.

The Association

New Representative Appointed for Newfoundland

Dr. F. A. Janes was appointed Official Representative for Newfoundland to the Canadian Dental Association Board of Governors at the annual meeting of the Newfoundland Dental Association. Dr. Janes resides at Corner Brook. He succeeds Dr. W. L. Goodwin.

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Council on Dental Education Delays Accreditation

At the meeting of the Council on Dental Education held June 21-22 last the report of the Survey Team on Canadian Dental Schools was presented. The report summarized the findings of the Survey Team in their inspections of the Canadian Schools over the last four years. The chief recommendation in the report was that action in the accreditation of the schools be delayed for a period of two years. This recommendation was unanimously adopted. The meeting of the Council was attended by all Deans of Canadian Dental Schools who expressed real appreciation for the accomplishments of the Survey Team. The Council will present the future plan for procedure at the forthcoming annual meeting. Dr. Shailer Peterson, Secretary, Council on Dental Education, American Dental Association, was in attendance.

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Dr. Routley Retires

Returning from World War I, Dr. Routley became Secretary of the Ontario Medical Association. In 1920 he was elected Associate Secretary of the Canadian Medical Association, becoming General Secretary in 1923. He held both positions until 1938 when he went over full time to the Canadian Medical Association.

At the Canadian Medical Association Annual Meeting in Vancouver this year he retired and was named President-Elect of the Association.

Over the years Dr. Routley's name became synonymous with Canadian Medicine. Indeed, his reputation has become world-wide, being one of the active organizers of the World Medical Organization. It is time to say that through his international activities medicine in Canada has established an enviable reputation.

We, of the Canadian Dental Association, pay tribute to his great contribution. The greatest spirit of cooperation and assistance has existed between his association and ours at all times. On several occasions he said to us, "What helps you at the same time helps us". His constructive advice will not only be missed by his own organization but by others as well.

Dr. Arthur Kelly, who has been Deputy Secretary of the Canadian Medical Association for several years succeeds as General Secretary.

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National Board Meets in Ottawa

The 2nd Annual Meeting of the National Board of Dental Examiners met in Ottawa, July 5th and 6th last. Consideration of the examination results of the first examination was the main topic of the meeting. Some 80 candidates took the examination. A full report will appear in an early issue of the Journal.

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Resolution from Canadian Red Cross Society

At its Annual Meeting held last May the Canadian Red Cross Society unanimously passed the following resolution which has now been received:

"The Central Council of the Canadian Red Cross Society expresses its gratitude to the medical, dental, nursing and teaching professions for their continued assistance and advice in all phases of the work of the Society throughout the year."

42nd Annual Meeting of Federation Dentaire Internationale

Some 24 countries were represented at the F.D.I. Meeting held June 8-13th at Scheveningen, Holland. Brigadier Wansbrough was in attendance representing the Canadian Dental Association. Dr. Oren Oliver of Nashville, Tennessee was re-elected President for a third term. Over 1,000 delegates attended the six-day meeting. Dr. Hillenbrand, Secretary of the American Dental Association and a full slate of delegates from that Association were in attendance. The 1955 meeting will be held at Copenhagen and the 1956 meeting at Zurich. In 1957 the Annual Meeting will be held in conjunction with the International Dental Congress at Rome (Aug. 3rd to 10th). Full membership in the F.D.I. was accorded the Association des Licenciés et Dentistes Universitaires of Belgium, the Malayan Dental Association, the Burma Dental Association, the Stomatological Society of Greece and Suomen Hammaslaakariliitto of Finland.

New Edition of "How To Brush Your Teeth"

This publication has proven to be a popular one. One C.D.A. member states, "For the patient who asks about home care I used to spend ½ an hour. Now with this leaflet I do a better service in less than 5 minutes." Price: One dollar per 100. Obtainable by writing: Cana-

dian Dental Association, 234 St. George St., Toronto.

Issues of June Journal Required

The June 1954 issue of the C.D.A. Journal is in short supply. Copies of this issue are urgently required. It will be appreciated if any having available copies will mail them to C.D.A. Headquarters.

Briefs

Sugar Information, Inc. - described as the sugar industry's educational agency, has launched a three-year, \$1,800,000 advertising and public relations campaign. General theme is that sugar is a non-fattening part of the diet and can aid in weight reduction.

Public Demand for Dental Health Services - has nearly doubled in United States in less than a quarter of a century according to a nation-wide survey by the Bureau of Economic Research and Statistics of the American Dental Association.

A Revised edition of Facts on Fluoridation was released in August. Single copy free on request.

Additional copies of the 1954 directory, recently distributed to the membership, are available at one dollar per copy.

Report on the Operation of a Pilot-Model Industrial Dental Service - has been issued by the Dental Health Division, Department of National Health and Welfare, Ottawa.

Evidence has been brought together to support a theory of functional and developmental association between the growth of the dentition, growth of the muscles of mastication, and certain structural characters of the cranial and facial skeleton. It is postulated that growth of the muscles is regulated by nerve reflexes developing in association with the development of the dentition, and in this way the specialized muscle actions found in different animals are related to their specialized dentitions on the one hand, and to specializations in the structure and form of certain regions of the skull on the other.

J. H. Scott, *American Journal of Orthodontics*

Committees and Councils

Health Insurance Studies

Watching development of plans for supplying dental services in this or other countries is a prime interest of this Committee. To study and become acquainted with these plans is the duty of the committee.

Development is taking place under three main headings — Pre-payment, Post-payment and Industrial Dental Services. Under those three headings recent developments will be reviewed in this article.

Pre-payment: Over the years several of these have been in existence. Some have fallen by the wayside but two or three have survived. Of special interest, though, is that the New York plan after several years of development, has finally commenced to operate. It is all-embracing and includes a complete service for subscribers and their families, after the subscriber has placed himself or herself in a condition of good dental health. This plan will be watched with special interest as their experience over a limited period will be very valuable data for the use of the committee.

Post-payment: In Detroit, Michigan and in Southern California plans for financing dental services on a time payment basis have been in operation for some years. Proponents of these are loud in their claims of their success. Both are a collaborating effort of the local dental organization and a bank. Other

areas have, over the years commenced similar experiments but have not met with the same success as these two. In two or three areas of Western Canada there is considerable interest in post-payment financing of dental services, in fact, the dental society in one city is about to embark on a plan. This and all other plans will be watched with interest by the committee because only by such experiments can a satisfactory, workable plan, that would be applicable to all parts of Canada, be evolved.

Industrial Dental Services: Several years ago in the U.S. there were established by a number of industries different types of Industrial Dental Service. These flourished for a time and then interest and the number participating began to decrease. Recently there has been renewed interest.

In May of this year the Dental Division of the Department of National Health and Welfare, Ottawa, published a report of the operation of a Pilot Model Industrial Dental Service. This report is beautifully prepared, very informative and highly instructive for any industry contemplating the inauguration of a preventive industrial dental service. The committee is very grateful to the department of National Health and Welfare for operating this service on a trial basis for a limited period. It is only by such efforts that the value of a service can be evaluated.

Harvey W. Reid, *Chairman*

The Corps

Brigadier E. M. Wansbrough and Major A. T. Roger addressed the candidates of the first medical officers course at the Medical Joint Training Centre in Toronto.

Brigadier Wansbrough spoke on "The Royal Canadian Dental Corps" and the subject of Major Roger's address was "Maxillo-Facial Injuries."

Lt.-Col. T. L. Marsh, C.O. of 1 Field Den-

tal Unit in Germany attended the meeting of the Federation Dentaire Internationale in Scheveningen, Holland. He was appointed as a Co-opted Member of the Armed Forces Committee.

The promotions of Captain D. H. Protheroe and W. H. Carter to the rank of Major have been announced. Major Protheroe was born in Gadsby, Alberta. He

served in the R.C.A.F. during the Second World War and was awarded the D.F.C. He retired in 1945 with the rank of Flight-Lieutenant.

In 1950 he graduated from the University of Alberta and was appointed to the Royal Canadian Dental Corps. He is now serving in Korea.

He is married and has three children.

Major Carter was born in Eston, Saskatchewan. He served in the R.C.A.F. during the Second World War and retired in 1945 with the rank of Flying Officer.

In 1950 he graduated from McGill University and was appointed to the Royal Canadian Dental Corps. He is now serving in Alberta, having just completed a tour of duty in Europe.

He is married and has four children.

Major R. H. G. Cunningham is now in Washington attending a 16-week Dental Officer Advanced Course at the Army Medical Service Graduate School.

Lt.-Col. W. M. Sinclair, C.O. of 25 Canadian Field Dental Unit in Korea was appointed chairman of a committee to raise funds for the re-building of the Korean village of Chin-Mok-Chong.

Col. Sinclair and his committee made a

concentrated drive throughout the Brigade and reached their objective in record time.

A very impressive ceremony was held less than a month after the campaign was started to commemorate the turning of the first sod by the Bde. Commander, Brigadier J. V. Allard.

Thirteen new officers who graduated this year have joined the Corps:

Dalhousie University

Capt. D. E. Charlton
Capt. M. A. Harquail
Capt. W. S. McIntyre
Capt. D. A. Stewart
Capt. W. K. Dickie
Capt. A. L. Kelland

University of Montreal

Capt. P. P. Filiatrault

McGill University

Capt. J. P. Mergl

University of Alberta

Capt. K. E. Leslie
Capt. M. J. Albinati
Capt. L. Dombowsky
Capt. L. A. Dutkowski

University of Toronto

Capt. R. J. MacLelland

Economic Security

Meeting Special Needs Through Insurance

by E. L. R. WILLIAMSON, M.B.E., B.P.A., F.R.E.S.

Consulting Economist, and Administrator of the C.D.A. Plan

The usefulness of insurance to the living policy-owner—in addition to the time-honoured function of protection for his dependents—is more widely recognised to-day than ever before. Greatest prominence has been given to the retirement income aspect, which various types of contract provide with varying degrees of efficiency. (See Article III in the March issue of the Journal.) Other functions, perhaps not so widely known, are the "Sinking Fund" and "Collateral".

"Sinking-fund" insurance can be designed to produce any given sum at any

required date. As such, it is a system of "forced savings" which provides a strong incentive to completion in the required time, and its corollary, defence against the temptations of procrastination. It can be a very profitable form of savings, particularly in the light of taxation advantages which will be dealt with in a subsequent article, and, in addition, it has an advantage which is enjoyed by no other form of savings: automatic completion of the savings programme in the event of either disability or decease—although these phases need not be included—straight savings can be made alone.

Mortgage protection to secure the family's home is a common function of insurance. Usually it provides for the liquidation of the mortgage in the event

of the decease of the mortgagee, the mortgage in the ordinary course being paid off by direct installments. Insurance may be used, however, to pay off the capital amount at the end of, say, twenty years, with the added advantage that this sum will be produced in the event of disability cutting off earnings—a contingency which the ordinary arrangement does not meet.

In ordinary business, insurance now is virtually indispensable, both as protection against the disruption of an enterprise through decease of one of the parties, and as collateral. In this latter aspect it is particularly useful to the professional man: it is a prime security, not subject to liquidation in the face of a declining securities market, and still performing its other functions whilst employed also as collateral. It safely may be said that combining as it does several advantages, an insurance contract will provide a larger amount of credit than will an equal amount of savings in any other form.

Another specialised function of insurance lies in the field of professional partnership. Two or more men may safely undertake a venture considerably greater than the sum of individual efforts, with insurance playing a diversi-

fied role as collateral, a sinking-fund for indebtedness incurred, and protection for the remaining partner or partners against the burden of buying out a deceased partner's share from his widow.

Insurance also plays an important role in a partnership between a senior practitioner and a junior who is perhaps just entering the profession. The senior is protected against loss of his investment in time and money in the junior, as well as guaranteed the purchase value of the practice when he wishes to retire and turn all over to the junior. The junior, in turn, has a safe and systematic savings medium to meet the eventual purchase price, and at the same time is protected against the contingency of an early demand for purchase through the premature decease of the senior.

In short there is virtually no security objective, or financial problem involving savings which cannot be met equally or more profitably through insurance, or with greater surety of completion in all the possible contingencies.

But perhaps the outstanding specialised function of insurance is that of an Education Fund for children. This will be dealt with in the October Article, as will the savings and investment aspects of insurance in November.

Correspondence

To The Editor:

I am prompted to write this letter to pay my great respect for the memory of the late Doctor Heber J. Hodgins, who passed away May 31.

Dr. Hodgins was present at the Brantford Board of Health meeting on August 17, 1942, when the suggestion was first discussed with reference to the fluoridation of Brantford's water supply. He was not an especially invited guest at the meeting, but fortunately was passing through the city on that day.

As the Director of the Dental Division of the Ontario Health Department, his presence at the meeting added much to the discussion. His eager-

ness and thoroughness in gathering necessary information during pre-fluoride days added much in courage which was most necessary for Brantford Health authorities to take the steps they did.

His efforts should also be appreciated with reference to the setting up of the original Dental Public Health Committee.

The writer of this letter had the especially happy privilege of expressing this great respect to him and his family before he died. I know there are many friends, readers of your Journal, who will appreciate reading these sentiments.

Respectfully,

Bradley W. Linscott, D.D.S.

The Provinces

Nova Scotia

The Nova Scotia Dental Association held its Annual Meeting at Halifax on July 12th, attended by members from Weymouth to Sydney. The highlight of this meeting was a banquet in honour of Dr. J. Stanley Bagnall, retiring Dean of the Faculty of Dentistry, Dalhousie University. To add to the pleasure of the occasion the Association had as its guests the President and Secretary of the Canadian Dental Association.

Dean Bagnall, son of an eminent dentist of the preceding generation, received his preliminary education in his native province of Prince Edward Island. Having served in the Artillery Branch of the Canadian Militia from 1906 to 1914, the call of duty took him overseas where he served as Captain of the 8th Canadian Siege Battery in France. To further his military training he passed the Military Staff course in 1935.

Following the cessation of hostilities in 1918 he continued his studies at Dalhousie University, graduating from the Faculty of Dentistry in 1921. In recognition of his outstanding achievements as a student he was awarded the University Gold Medal. In the same year he joined the Faculty on a full time basis as Secretary, which position he held until 1947 when he succeeded Dr. W. W. Woodbury as Dean of the Dental School.

His offices and connections within his chosen profession are manifold, among which may be noted:

Member of the Senate, Dalhousie University.

Chief of the Dental Department, Victoria General Hospital.

Consultant Halifax Infirmary, D.V.A. Hospital, Camp Hill Hospital, Halifax Tuberculosis Hospital, Public Health Clinic.

Chairman By-Laws Committee, C.D.A.
Secretary Canadian Dental Association, 1924-1942.

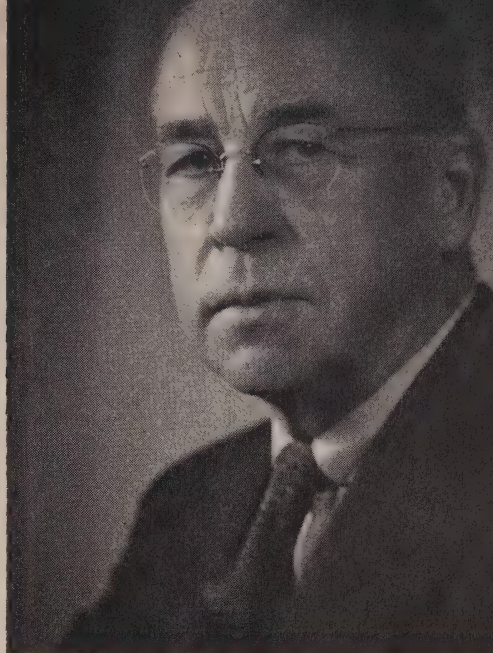
Associate The American Dental Association.

Member Dental Section, National Research Council; International Research Society, in which body he held the Office of Secretary and later that of President.

Fellow The International College of Dentists; Dental Section, Royal College of Surgeons (Eng.)

Contributor of many articles in dental literature.

Dean Bagnall better known among a host of friends, far and wide, as "Stan," has long been recognized as a dental educationalist



Dr. J. STANLEY BAGNALL

of the first order. His decisions and advice were always based on sound fundamentals with a view to the best interests of the profession over the long term. As a friend and counsellor over the years he never failed to give of his best.

It was a genuine pleasure to his conferees of the Nova Scotia Dental Association to have Dr. H. S. Crosby, speaking for the Association, present Dean Bagnall with photographic equipment to enable him to increase his pleasures in his principal hobby.

It is a matter of considerable satisfaction that "Stan," upon his retirement from the office of Dean, will continue his association with the Faculty of Dentistry which he has served so long and so faithfully.

H. M. E.

British Columbia

A change in policy has been made by the **Division of Preventive Dentistry** of B.C.'s Department of Health and Welfare as announced by Dr. Frank McCombie, the Director.

During the past five years there has been difficulty in recruiting enough suitably qualified and experienced full-time dental officers. This is primarily due to the shortage of dentists in Canada, a situation which it is forecast will steadily become worse until increased training facilities for dentists are provided. And secondly there has been a continuing increase in child population within the Health Unit areas.

In future in all health unit areas, preventive dental treatment services will be encouraged through community dental clinics, operated either on a local basis, or correlated by the Board of Trustees of the School District, or by the Union Board of Health, all with the guidance and assistance of the local Health Unit staff. Financial support for such programs will continue and will provide for treatment services for preschool children and pupils of Grades 1, 2 and 3. It has been calculated that outside of metropolitan areas, there are sufficient dentists to provide such a service. This calculation is based on these dentists, on the average, co-operating in such clinics to the extent of only two morning sessions each week. When community water supplies are fluoridated, and the dramatic reduction in dental decay amongst the children is achieved thereby, the time required from the local dentists will probably be little more than an average of one session per week to provide this service.

The present full-time dental officers with health units, when they receive post graduate public health training, will be re-appointed as **Regional Dental Consultants**. Their services will be available within two or three adjacent health unit areas, depending on the total population and geographical area.

The duties of the Regional Dental Consultants are broadly described as falling into two categories, educational and administrative. In the educational field, they will be available to co-operate with School Inspectors and Principals to provide guidance and assistance towards the improvement of the teaching of dental health within the schools, including the provision of educational aids. They will be available to attend teacher conferences with this object in view. It will be their duty to encourage the teaching of methods of preventing dental disease, through attendance at regular meetings, and by personal interviews with medical and dental practitioners and public health personnel. They will also be available to reinforce the dental health teaching in the schools by addressing lay groups, such as P.T.A.'s and Service Clubs in their respective Health Unit areas.

In the administrative field, the Regional Dental Consultant will be available to the agency sponsoring the community dental clinic to provide advice so that the clinic may operate at maximum efficiency. To this end, he will meet the officials of the agency and the dentists co-operating in the clinic as required. The Regional Dental Consultant will also assist in inducing a dentist to locate in any community without

a resident dentist, or in persuading a dentist to visit on a suitable schedule.

The Division has announced the appointment of two Regional Dental Consultants: Dr. E. W. B. McPhail who will be with the Simon Fraser and North Fraser Valley Health Units, and Dr. D. J. Yeo who will be with the Boundary and Upper Fraser Valley Health Units.

—D. H. M.

Ontario

1954 objectives of your **Dental Alumni Association** include:—

1. Office visitations by students of the graduating class.
2. Increase of at least 25% in membership.
3. Awarding of two bursaries of \$200.00 each to pre-Dental students.
4. Participation in, and support of student activities, e.g.:—
 - a) Home coming activities.
 - b) Students' golf tournament.
 - c) Participation in Faculty Open House.
 - d) To meet and associate with the Dental students at our Annual Banquet and Dance.
5. Vocational Guidance.

In December of last year over 3000 letters were mailed to Toronto Graduates in our Annual Appeal for contributions to our **Educational Fund for Scholarships** to worthy students.

The treasurer of this fund reports that as of June 25th there have been 48 contributions giving a total of \$382.00.

Your Alumni executive believes better things of our Graduates in Dentistry and that many have just overlooked contributing to this worthy cause.

Your contribution mailed to our Fund Treasurer:

Dr. Jack Marshall,
Belleville, Ont.

will be greatly appreciated. Remember it is Tax Exempt.

J. E. T.

Lambton County Dental Society recently elected Dr. W. Fletcher of Sarnia as president for the ensuing year. Also nominated were: Dr. M. Pearlman, vice-president; Dr. L. Brunton, secretary; Dr. A. Storey Jr., treasurer.

In Memoriam

John Stanley Lapp.—Dr. John Stanley Lapp of Toronto passed away on July 22nd 1954, at the age of 57.

Born in Pickering Township, Ontario, Dr. Lapp attended Malvern Collegiate. After graduating from the Royal College of Dental Surgeons in 1920, he practised in Toronto for 34 years.

Dr. Lapp was very active in organized dentistry. He was a past president of the Toronto East Dental Association; past chairman of the Public Relations Committee of the Canadian Dental Association and of the Dental Public Health Committee of the Ontario Dental Association; past member of the Board of Governors of the Ontario Dental Association; member of the executive council of the Toronto Academy of Dentistry, and Chairman of the Toronto Conference of Dental Health Services. In 1938 he was appointed to the executive of the Canadian Hygiene Council, and he served as chairman of the Canadian Dental Centennial Committee in 1940.

As president of the Toronto Branch of the Navy League of Canada from 1943-7, Dr. Lapp had the distinction of organizing the Royal Ark Sea Cadet Training Ship. He was a past president of the Beaches Businessmen's Association and an executive member of the Toronto and District Businessmen's Council. He was the author of a textbook for dental nurses, and a member of Xi Psi Phi, the Masonic Order, Empire, Liberal Businessmen's and Lions clubs, and of St. Aiden's Anglican Church.

Dr. Lapp is survived by his wife, the former Victoria Cotton; a son, Phillip; one brother, Dr. Alex Lapp of Rockingham, N.S.; and two sisters, Mrs. Reg Scott, Toronto, and Miss Essie Lapp, B.C.

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Clifford Baron Hallett.—Dr. Clifford Baron Hallett of Saskatoon died on July 17th, at the age of 58.

Born in Saltcoats, Sask., Dr. Hallett received his education there, at Yorkton, and later at the University of Saskatchewan. In 1917 he enlisted in the PPCLI with the university battalion. After the war Dr. Hallett graduated from the University of Toronto.

Following a period of practice at Langenburg, he served with the Army Dental Corps attached to the air force. For the past 12 years he has practised in Saskatoon.

Dr. Hallett was a past president of the Saskatoon Dental Association, and a member of the Kiwanis Club and the Canadian

Legion. He was also a prominent golfer.

Surviving are his widow, Veronica; one son, Dr. W. M. Hallett; two sisters, Mrs. C. E. Roberts, Montreal, and Evelyne, Baie Comeau, Que.; and three brothers, Keith of Yorkton, Herbert of Winnipeg, and Maurice of Windsor.

•
Milton L. Moore.—Dr. Milton L. Moore of Medicine Hat, Alberta, passed away recently following several months' illness. He was 64.

Born in Smiths Falls, Ontario, Dr. Moore graduated from the Royal College of Dental Surgeons of Ontario in 1910.

He was a past vice-president of the Alberta Fish and Game Association, a member of the Rotary Club and Odd Fellows Lodge.

Dr. Moore is survived by a daughter, Mrs. W. M. Tullis of Edmonton.

•
Albert Rennie Kinsman.—Dr. Albert Rennie Kinsman of Georgetown, Ontario, passed away in June, at the age of 81.

Dr. Kinsman was born in Exeter, Ontario, and received his early education at Clinton. Following graduation from the Royal College of Dental Surgeons of Ontario in 1897, he practised in Exeter until 1928, and in London until 1940 when he retired to Guelph and Georgetown.

Dr. Kinsman was an honorary member of the Royal College of Dental Surgeons. He was also a member of the Baptist Church, the Lions Club, London, and the Grand Lodge of the I.O.O.F.

•
Harvey Gellatly.—Dr. Harvey Gellatly of Fort William died on August 7th 1954. He was in his 58th year.

Born in King, Ontario, Dr. Gellatly received his early education in Newmarket. He graduated from the Royal College of Dental Surgeons of Ontario in 1923, and since then practised in Fort William.

Dr. Gellatly was a past-president of the Thunder Bay Dental Society; a director and vice-president of the Gyro Club; and a member and chaplain of the Elks.

Surviving are his wife, the former Nessie Buchanan; one son, Bruce; one daughter, Marion (Mrs. G. Dee, Toronto); two sisters, Clara and Jessie; and two brothers, Roger and Allan.

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1955 Toronto, Ontario May 15th — 18th

1956 Banff, Alberta June 3rd — 6th

Future Events

Date	Function	Location	Officer	Address
Sept. 18	Convention of Northern Ontario Dent. Association	North Bay	Dr. W. L. Boland	355 Ferguson St., North Bay, Ontario.
Sept. 19-20-21	Eastern Ontario Dental Association Convention	Kingston	Dr. M. M. Derrick	Suite 105, 183 Metcalfe St., Ottawa.
Oct. 8	Dental Alumni Annual Meeting	Toronto	Dr. Ben Gross	816 Bathurst St., Toronto
Oct. 13-Nov. 4	Annual Meeting of American Institute of Dental Medicine	Palm Springs, Calif.	Miss Marion Lewis	2240 Channing Way, Berkeley 4, Calif.
Oct. 20-22	Montreal Dental Clubs' Annual Fall Clinic	Montreal	Dr. Bruce Ward	1414 Drummond St., Montreal, P.Q.
Nov. 5	Annual Meeting of Academy for Oral Rehabilitation of Handicapped Persons	Miami Beach, Fla.	Dr. Hugh Kopel	19933 Livernois Ave. Detroit, Mich.
Nov. 6	American Academy of Gold Foil Operators	Miami, Fla.	Dr. Gerald Stibbs	School of Dentistry, University of Washington, Seattle 5, Wash., U.S.A.
Nov. 6-7	American Academy of Implant Dentures	Miami Beach, Fla.	Dr. Wm. Barb	668 E. Maple Rd., Indianapolis, Indiana, U.S.A.
Dec. 5	Mid Annual Meeting of American Academy of Dental Medicine	New York City	Dr. William Greenhut	124 East 84th St., New York 28, N.Y.

Short Graduate Courses

Date	Course	Location	Address
Sept. 13-15	Anatomy as Applied to Dentistry	University of Toronto	The Dean, Faculty of Dentistry, University of Toronto, 230 College St., Toronto, 2-B, Ontario.
Sept. 20-Oct. 15	5-day Postgraduate Courses	Ohio State University	Dr. H. B. C. Robinson, College of Dentistry, Ohio State University, Columbus, Ohio.
Nov. 29-Dec. 3	Dental Radiology	University of Toronto	The Dean, Faculty of Dentistry, University of Toronto, 230 College St., Toronto 2-B, Ontario.
Jan. 17-21 1955	Periodontics	as above	as above
Jan. 23-Feb. 6	Orthodontics	Temple University	Dr. Louis Herman, Director of Postgraduate Studies, Temple University Dental School, 3223 North Broad Street, Philadelphia 40, Pa.
Jan. 26-27-28	Clinical Occlusion	as above	as above

Journal

DE L'ASSOCIATION DENTAIRE CANADIENNE

La structure histologique de la dent en relation avec la dentisterie opératoire

par ROLAND HOULE, E. E. C. D., Montréal

La chirurgie dentaire est devenue, à cause de son évolution moderne, une science de plus en plus complète et précise. Le progrès vaste et rapide, les problèmes plus nombreux et mieux résolus élargissent constamment son champ d'action. De ce développement considérable sont nées diverses spécialisations, telles la chirurgie, l'endodontie, l'orthodontie, la dentisterie opératoire qui se partagent les différents travaux de la profession. Parmi ces spécialisations, la dentisterie opératoire proprement dite est sans doute celle qui fournira au plus grand nombre de praticiens un champ commun d'action. Elle conservera et rétablira la condition physiologique de la dent en prévenant ou soustrayant les caries dentaires, l'érosion, l'abrasion, en maintenant l'occlusion, les contacts normaux, etc.

Pour atteindre ces fins multiples, la dentisterie opératoire exige de nom-

breuses notions qui assureront l'efficacité et la durée de ses traitements. Ainsi, le dentiste devra-t-il posséder des notions solides d'anatomie, de physiologie, de pathologie générales par lesquelles il comprendra le mécanisme et le rôle de la dentition en relation avec les divers systèmes de l'économie.

Il est une science qui plus particulièrement s'apparente à la dentisterie opératoire telle que nous l'envisageons aujourd'hui, c'est-à-dire en science traitant la dent surtout au moyen de l'obturation. Nous voulons signifier l'histologie ou l'étude microscopique des tissus structuraux de la dent. Cette étude est très importante pour la dentisterie opératoire. En effet, c'est à même ces tissus que la cavité sera taillée, et sur eux reposera le bloc obturateur qui rendra à la dent sa forme anatomique, sa résistance et sa fonction physiologique. Nous savons que la construction d'un monument demande une connaissance et une préparation adéquate du terrain où il s'érigera. Ainsi en est-il de l'obturation dentaire. Elle est un

Travail préparé dans le service de dentisterie opératoire de la faculté de chirurgie dentaire de l'Université de Montréal.

monument sculpté, fixé à la dent, soumis aux forces de la mastication, aux variations de la température, aux récidives de la carie dentaire, etc. C'est par une connaissance parfaite et suivie des tissus structuraux de la dent que l'opérateur réussira à préparer une cavité idéale et y adapter un obturateur durable.

Quoique l'histologie de la dent peut être envisagée sous plusieurs aspects en rapport aux traitements dentaires, nous appliquerons à considérer cette étude en regard à la dentisterie opératoire. Les tissus de la dent peuvent se classer en deux groupes. D'une part, les tissus calcifiés comprenant l'émail, la dentine, le ciment et d'autre part les tissus non calcifiés telles la pulpe, la membrane péri-dentaire, la gencive. Nous considérons successivement chacun de ces tissus parallèlement à ses relations à la dentisterie opératoire.

L'émail

Dès son premier contact avec la dent, le dentiste rencontre l'émail. L'émail est cette couche de tissu dur, d'aspect blanchâtre et homogène, lisse, qui recouvre la couronne anatomique de la dent depuis la jonction énamo-cémentaire jusqu'à la surface occlusale. Inégalement réparti sur la dent, il constitue une couche plus épaisse sur les surfaces occlusales et incisives et une couche très mince à la jonction énamo-cémentaire. Nous devons noter aussi à cause de son rôle physiologique, la grande dureté et la grande résistance de l'émail.

Si nous préparons une coupe histologique d'un émail sain et l'examinons au microscope, nous rencontrons à nouveau un milieu homogène; à peine percevons-nous quelques rares striations ici et là. Il semble que les divers constituants de l'émail ont tous une densité ou un indice de réfraction de la lumière semblable ou très voisin l'un de l'autre. Soumettons maintenant cette même préparation à l'action d'un acide dilué et remplaçons-la sous le microscope. Nous apercevons alors un grand nombre de prismes polygonaux et réguliers retenus les uns aux autres par une substance interprismatique

plus attaquant par l'acide que les prismes eux-mêmes. La direction de ces prismes ou bâtonnets de l'émail varie selon les dents. Sur la plus grande partie des faces axiales, depuis la surface de la dent jusqu'à la jonction énamo-dentinaire, ils sont parallèles entre eux, de diamètre régulier et en ligne droite. Au contraire, sur les cuspidés, les bâtonnets, depuis la surface de la dent jusqu'à la jonction énamo-cémentaire, prennent un angle de plus en plus aigu par rapport aux tubules dentinaires. Sur les dents renfermant des points et fissures, les prismes sont inclinés vers la base de ces structures. Plus exceptionnellement, les prismes de l'émail au lieu d'être parallèles entre eux, sont ondulés, tordus les uns sur les autres, surtout sur les dents postérieures et aux deux tiers intérieurs de leur longueur.

Ces deux principales caractéristiques des bâtonnets de l'émail, à savoir leur direction et leur consistance supérieure à celle de la matière interprismatique, sont de grande importance en dentisterie opératoire. En effet, dans la préparation de la cavité, en appliquant un instrument tranchant dans le grand axe des prismes, nous constatons qu'une faible pression suffit pour les séparer, surtout s'ils ne sont pas supportés par une saine dentine, ceci à cause de la faiblesse de la substance interprismatique. Au contraire, si les prismes ne sont pas parallèles, il devient très difficile de les séparer ainsi. Quand ils ne sont parallèles que sur le tiers externe de leur longueur, cette partie seule cédera sous la pression de l'instrument, si la dentine est parfaitement saine. Dans ce cas, il est nécessaire de miner la dentine sous-jacente; les prismes alors se séparent assez facilement. Cette dernière constatation amène une notion nouvelle, à savoir que l'émail ne tient pas sa force d'une qualité inhérente, mais bien d'une dentine saine qui lui sert de support essentiel et sans laquelle il devient faible et friable. En conséquence, la forme et l'étendue de la cavité dépendra non seulement de la direction des prismes de l'émail, mais aussi d'une dentine saine capable de soutenir ses parois. En général, lorsque l'émail est mal soutenu

par la dentine, il faut le retoucher ou le renforcer à l'aide d'un solide ciment afin que les parois de la cavité ne cèdent point sous les forces de la mastication; surtout si l'obturation n'est que temporaire ou inachevée.

Nous avons fait remarquer précédemment que presque toujours les bâtonnets de l'émail sont parallèles entre eux dans le tiers externe de la couche d'émail. Cette particularité permet une préparation facile et certaine de l'angle cavo-périphérique externe, car tout émail non supporté à cet endroit sera fort exposé à céder sous une pression même négligeable. La partie externe et parallèle des prismes sera facile à trancher, même si la partie profonde résiste. Si le mur ou la paroi de la cavité est parallèle à la direction des prismes, il faudra faire un biseautage de l'émail à l'angle cavo-périphérique externe, de façon à ne pas laisser de bâtonnets non supportés à cet endroit. Ceci vaut surtout pour les cavités destinées à recevoir un matériel obturateur difficile d'adaptation. Telles les incrustations et les aurifications où les bouts libres des bâtonnets non supportés au niveau de cet angle seront exposés à tomber lors du brunissage de l'or.

En général, nous pouvons établir comme règle que la direction des bâtonnets de l'émail va du centre de la couronne vers la surface externe de la dent. Sur la plus grande portion de la couronne, la direction des bâtonnets est perpendiculaire à la surface; cependant, sur chacune des dents se rencontrent des zones où ils font un angle plus ou moins aigu avec la surface. Une des premières choses à remarquer est qu'une section parallèle et perpendiculaire à la surface axiale de la dent présente des bâtonnets parallèles entre eux depuis la jonction énamo-cémentaire jusqu'à la crête marginale, aux cuspides des prémolaires, molaires et au bord incisif des incisives; les bâtonnets sont donc de la sorte perpendiculaires en tout point à la surface externe de la dent. Cependant, même si cette loi peut servir de guide dans la préparation de la cavité, il ne faut pas oublier les exceptions et les déviations à la règle générale.

Si nous devons préparer une cavité sur la surface axiale d'une dent et que cette cavité approche une cuspide ou une crête marginale de très près, la paroi d'émail doit être inclinée vers l'extérieur ou occlusalement, autrement le bout des bâtonnets serait laissé libre à la surface. D'autre part, si nous inclinons trop la paroi, elle devient trop faible. Sur la surface occlusale des prémolaires et molaires, la direction des bâtonnets d'émail est telle que des parois de cavités perpendiculaires et parallèles dans des points et fissures sont, sauf si la cavité est très grande, suffisamment fortes. Ceci, parce que l'inclinaison des bâtonnets est vers le centre de l'endroit où la restauration est faite. Ce n'est seulement qu'à l'approche des crêtes marginales et des apex des cuspides qu'il faut considérer plus étroitement la direction des prismes. Dans une très grande cavité occlusale, la paroi de l'émail doit toujours être divergente et rester ainsi parallèle aux bâtonnets d'émail.

Sur les surfaces distales des incisives et des canines où l'angle est assez rond, la déviation des bâtonnets d'émail de l'angle droit à la surface commence plus loin de l'angle incisif que sur les faces mésiales. Les parois d'émail à cet endroit demandent un soin particulier. La plus grande différence se trouve sur la face distale de l'incisive latérale supérieure qui a l'angle incisif le plus arrondi. Sur la surface mésiale, où l'angle est aigu, le changement dans la direction des bâtonnets se fait brusquement à l'angle incisif. Ainsi l'inclinaison considérable qui pourrait nuire à la cavité est généralement si près de l'angle qu'elle n'entrave plus la solidité des parois de l'émail. Donc, les cavités sur les surfaces mésiales des incisives supérieures peuvent approcher davantage l'angle incisif avec sûreté et offrir une solide crête pour une restauration, ceci plus facilement que sur la surface distale de ces dents.

Si nous comparons la direction des bâtonnets d'émail des dents temporaires à celle des dents permanentes, nous remarquons une différence assez marquée. Dans l'émail des dents permanentes, les

prismes sur les surfaces axiales sont inclinés gingivalement du dehors vers le dedans à mesure que l'on approche le ciment. Sur les dents temporaires, il n'y a pas d'inclinaison des bâtonnets en aucun point gingivalement. Tous les prismes d'émail sur toutes les surfaces axiales sont inclinés occlusalement. Dans la préparation de la paroi gingivale des dents temporaires, la paroi peut-être horizontale sans qu'il soit nécessaire de l'incliner gingivalement.

La dentine

La dentisterie opératoire exige également une connaissance exacte de la nature et de la distribution de la dentine. La dentine est un autre tissu dur et calcifié de la dent et sous-jacent à l'émail. Sa calcification est cependant moins complète et elle comporte un certain degré d'élasticité. Elle est beaucoup moins résistante que l'émail et plus jaunâtre. De fins canaux tubulaires traversent la dentine et renferment des fibres protoplasmiques, dites fibres de Tome, et qui constituent les prolongements des odontoblastes. Dans une dentine jeune, ces fibres sont particulièrement vitales et sensibles. Avec l'âge, la calcification se continue dans les canaux qui parfois deviennent complètement oblitérés, ce qui diminue grandement la sensibilité et la douleur durant l'opération. De même, en taillant une cavité dans la dentine, devra-t-on se souvenir que les tubules sont plus nombreux en approchant la pulpe qu'aux voisinages de la jonction énamo-dentinaire, ce qui explique la grande sensibilité d'une cavité profonde.

La dentine en opposition à l'émail est donc un tissu très sensible, répondant aux moindres chocs thermiques et à la plus petite irritation chimique ou mécanique. Son extrême sensibilité l'amène-t-elle aussi à réagir et à se défendre en répondant aux irritants par une calcification plus profonde, formant la dentine secondaire, qui tendra toujours à protéger la vitalité de la pulpe et éviter qu'on l'expose inutilement. Quand les tubules dentinaires approchent la jonction énamo-dentinaire, ils se ramifient, d'où la sensi-

bilité et la douleur extrême, lorsqu'en préparant une cavité, l'on taille à ce niveau. De même les fibrilles dentinaires sont surexcitées si la carie, l'érosion, l'attrition, atteignant la jonction énamo-dentinaire, exposent la dentine. La salive et l'air auront un effet analogue si une saine dentine est trop longtemps exposée au cours d'opérations dentaires.

Les fibrilles dentinaires et les odontoblastes, devant l'irritation progressive de la carie et de l'érosion, peuvent réagir physiologiquement et se protéger par la formation de dentine secondaire. Contrairement, lorsque la dentine saine est exposée au cours d'une opération, l'irritation est soudaine et avant que la dentine secondaire ait eu le temps de se former, la pulpe peut-être plus ou moins affectée. D'où il faut toujours refermer une cavité par un obturateur temporaire entre les diverses visites du patient.

Il faut aussi toujours traiter la dentine comme susceptible à l'infection bactériologique. Elle devrait être constamment protégée de la salive et de l'infection durant les opérations et avant que l'obturateur soit définitivement en place. Sinon, elle devient hypersensible à cause de la pression osmotique et du changement de tension du cytoplasme en dedans des tubules. D'où la nécessité de protéger la dentine et si cela n'est pas possible de toujours la garder sèche, au moins la stériliser avant de placer l'obturateur et la couvrir d'un ciment protecteur entre les différentes visites du patient. Le choix du germicide stérilisant ou ciment doit être certain afin de ne point endommager la pulpe. Et, si la carie est profonde à ce point qu'elle s'approche de la pulpe, on doit la renforcer au moyen d'un ciment et d'un vernis protecteur qui fermera les tubules dentinaires et isolera la pulpe des chocs thermiques que l'obturateur métallique peut causer. Il a de plus été cliniquement remarqué que dans une dent dévitalisée où on a extirpé la pulpe, la dentine devient friable et moins élastique; il faut donc une attention particulière dans le traitement de ces dents afin d'éviter un bris de la dentine.

En dehors de la dentine normale, on

peut aussi rencontrer un type plus rare de dentine. Il s'agit d'une dentine que l'on appelle opalescente, d'apparence plus ou moins translucide et d'un gris opalescent. Elle se caractérise surtout par un arrangement particulier des tubules dentinaires dont la distribution se fait sans ordre dans la masse dentinaire. On remarque que ces dents sont moins attaquables par la carie et qu'elles s'usent très rapidement par la mastication normale.

Une autre notion importante regardant la dentine, est celle de la délimitation des lignes de récession de la pulpe après la croissance de la dentine. Les cornes de pulpe sont des prolongements de la pulpe limités par ces lignes. Au début de la croissance, toute la surface occlusale de la dent est comprise dans ces cornes de pulpe, alors qu'une mince couche de dentine seulement existe; le reste de la couronne est rempli de pulpe. La dentine croissant du joint énamo-dentinaire vers l'intérieur, refoule la pulpe qui diminue de plus en plus devant l'avance de celle-ci. Ce processus plutôt rapide durant l'enfance, ralentit graduellement avec l'âge jusque vers les quarante ans ou plus. Si les conditions ne sont plus normales à cause d'une carie progressive, de l'érosion, de l'abrasion, etc., le processus est plus rapide et peut même amener une calcification complète de la chambre pulpaire. Dans un cas comme dans l'autre les cornes de pulpe deviennent de plus en plus petites. Il arrive assez souvent cependant qu'une corne de pulpe persiste comme une prolongation de la pulpe atteignant presque le sommet d'une cuspidé, même à l'âge mûr où la chambre pulpaire est très petite. Ce fait occasionne-t-il aussi de nombreuses expositions de pulpe dans la préparation d'une cavité où la carie n'est pourtant que relativement profonde.

L'étude anatomique et histologique de la dentine en regard de ces lignes de récession de la pulpe renferme un intérêt important en dentisterie opératoire. Dans les molaires, les cornes de pulpe mésio-buccales sont les plus dangereuses et les plus souvent exposées au cours d'opérations. Les cornes de pulpe mésio-

linguales des molaires inférieures sont-elles aussi à surveiller étroitement. Sur les surfaces proximales, les accidents sont beaucoup plus rares. On devrait toujours en préparant une cavité éviter de tailler dans ces lignes de récession des cornes de pulpe, à moins qu'il ne soit nécessaire de le faire à cause d'une carie très étendue.

Dans la préparation des cavités proximo-occlusales, il y a ordinairement un espace qui permet de tailler le tiers de l'épaisseur bucco-linguale de la dent sans qu'il n'y ait danger pour les cornes de pulpe. Dans les cavités mésiales des molaires supérieures, le gradin peut être plus large que sur les côtés distal des molaires supérieures et mésial et distal des molaires inférieures.

La dentine de la dent temporaire ressemble en tout à celle de la dent permanente. La pulpe est cependant beaucoup plus étendue et la carie l'expose plus rapidement. A noter que dans les dents temporaires, il n'y a pas formation de dentine secondaire.

La pulpe

Dans le traitement des dents vivantes, la conservation de la pulpe dans ses conditions normales constitue le soin le plus important de l'opération. La pulpe est en effet le tissu le plus vivant et le plus spécialisé de la dent. Elle se compose de tissu embryonnaire hautement spécialisé comprenant une zone centrale où se trouvent des fibroblastes, lymphocytes, histiocytes, des filets nerveux et des vaisseaux sanguins; autour de cette zone centrale, une zone périphérique où nous rencontrons surtout les odontoblastes et leurs prolongements. Dû à sa haute spécialisation, la pulpe joue un rôle important dans la dent. Elle aide à sa formation et nourrit la dentine; joue un rôle sensitif et de défense par la phagocytose de ses éléments mésenchymateux.

Au cours des soins de dentisterie opératoire, tout risque d'irritation de la pulpe doit être éloigné. Quand un irritant, thermique, chimique ou autre agit sur une pulpe, les artères nourricières se dilatent et la quantité de sang entrant dans la

pulpe augmente considérablement. Tant que le système veineux suffit à retourner cet excès sanguin aucun dommage n'arrive à la pulpe. Cependant, si la pression devient telle que le flot sanguin veineux ne peut plus s'écouler normalement, à cause de l'orifice trop étroit à l'apex radiculaire, il y aura congestion, dégénération et peut-être nécrose de la pulpe. Une légère réaction hypérémique de la pulpe ne la menacera que rarement; cependant, il y a danger dans les cas d'irritations soudaines et intenses ou chroniques qui diminuent la résistance et la vitalité de la pulpe, même après disparition de la cause.

Hildebrand a classifié en quatre groupes les irritants capables d'affecter gravement une pulpe durant et après les traitements opératoires dentaires. Peuvent intervenir les irritants mécaniques incidents au fraissage de la dent, les irritants thermiques dus au fraissage ou aux liquides très chauds et très froids, les irritants chimiques produits par la salive, les médicaments, la nourriture et les irritants bactériologiques. Nous pouvons aussi inclure parmi ces irritants les chocs thermiques persistants causés par une large obturation métallique placée trop près de la pulpe. On devrait toujours avant d'entreprendre un travail s'assurer de l'état de la pulpe. Elle ne devrait montrer aucun signe de douleur et être recouverte par une saine dentine. Les tests électriques et radiologiques doivent être normaux.

Kesel et Stephen classifient d'autre part en trois groupes les pulpes pathologiques; ce sont les pulpes hypérémiques, inflammées et finalement les pulpes nécrotiques.

La pulpe hypérémique donne une sensation douloureuse au contact de liquides chauds ou froids et d'air froid. Cette douleur n'est que passagère, s'il s'agit d'une hypérémie physiologique et disparaît après quelques secondes. Dans les cas pathologiques, la douleur devient plus intense et persiste davantage, de même en est-il du test électrique. Dans une pulpe très endommagée, le froid peut soulager la douleur et la chaleur la provoquer intensément. Au point de vue clini-

que, nous découvrirons dans ces cas soit une carie profonde, de l'érosion ou une obturation récente. La radiographie ne montre rien d'anormal à l'apex. Dans de tels cas, plus la douleur sera longue et intense, plus le pronostic sera douteux.

La pulpe inflammée, dans un cas aigu, sera douloureuse avec ou sans irritation thermique. Une inflammation chronique ne pourra laisser percevoir que de faibles symptômes pathologiques. Dans ces cas, généralement nous trouvons une cavité large et profonde où la pulpe est exposée ou non et recouverte par une obturation massive. Dans les inflammations aiguës, la pulpe répond davantage à la chaleur et la douleur peut persister pendant quelques minutes; le froid peut diminuer la douleur. Une inflammation chronique laisse voir une faible zone radiotranslucide à l'apex. L'espoir de conserver une telle dent vivante est douteux et la dévitalisation devient souvent nécessaire.

La pulpe nécrotique comporte une douleur antécédente très vive et qui, subitement, s'est calmée par après. Souvent cela remonte à des années en arrière et le patient l'a oublié. La membrane périodentaire et la zone apicale peuvent sembler normales. De même la dent, en dépit de caries étendues, de décoloration, d'abrasion nous apparaît normale. Les tests électriques et thermiques demeurent sans réponse; sauf, si au cours d'un test électrique, nous touchons à une obturation métallique; la réponse est positive dans ce dernier cas. Une telle dent sans pulpe et dévitalisée exige le traitement de canal ou l'extraction.

Un traumatisme mécanique résultant de la suroccclusion d'une obturation vis-à-vis la dent antagoniste amène souvent des dommages considérables à la pulpe. Une telle suroccclusion laissée en permanence amènera un déchirement de la membrane périodentaire et souvent la pulpe dégénérera et le traitement de canal deviendra nécessaire. D'où l'importance d'éviter toute suroccclusion non seulement en position centrique, mais dans toutes les positions de la mandibule.

L'irritation qu'une pulpe subit d'un irritant mécanique durant et après le taillage

de la cavité est mal définie. Cependant, l'on reconnaît que des changements se produisent dans la dentine et dans la pulpe quand la dentine est exposée à la salive, soit par l'attrition ou l'érosion, soit après l'usage de meules et de fraises. Les réactions pulpaires sont souvent moindres chez les patients plus âgés à cause de la présence de dentine secondaire. Dans la préparation de la cavité il faut éviter de détruire inutilement les tissus de la dent, employer des instruments très tranchants et garder la dentine sèche autant que la chose est possible. Ces mesures protégeront la pulpe et la dentine et éviteront de nombreuses complications.

L'usage de la fraise et de la pierre montée joue un grand rôle dans la protection de la pulpe. La douleur sera d'autant moindre que la fraise sera plus tranchante et plus petite et tournant à un rythme modéré. Les pierres montées doivent être naturelles, de grosseur et de dureté assurant un rendement maximum à une haute vitesse. Pour éviter une production excessive de chaleur, on évitera une trop grande pression sur la fraise et on laissera à la dent le temps de se refroidir, soit en coupant à différents intervalles ou en arrosant la dent d'un jet d'eau tiède.

Afin de mieux protéger la pulpe, il faut traiter adéquatement la dentine qui la recouvre. Quand la cavité est terminée, on doit assécher la dentine, la badigeonner d'eugénol ou de phénol pendant quelques secondes et assécher à nouveau avant de placer l'obturateur. Si la cavité est très profonde, après l'usage du phénol, on appliquera une mince couche de vernis protecteur qui fermera les tubules dentinaires aux infiltrations de salive ou de bactéries. A la suite de ce vernis, on insérera une couche de ciment protecteur qui isolera la dentine et la pulpe des chocs thermiques.

D'autre part, une dent peut demeurer excessivement sensible au chaud ou au froid après l'insertion d'une grosse obturation métallique. Il faut alors avertir le patient qu'il devra éviter d'absorber aucun aliment très chaud ou très froid. Une lé-

gère hyperémie peut s'ensuivre, mais après quelques jours tout redeviendra normal et la pulpe sera à l'abri de tout danger. Dans le finissage de l'obturation, il faut éviter la production excessive de chaleur au cours du polissage avec les disques, cupules, etc.

En général, une obturation devrait être commencée et terminée au cours de la même visite. Quand une cavité est préparée, retouchée à maintes reprises, la dent devient de plus en plus sensible à chaque visite. Ceci se produit même si un ciment temporaire ferme la cavité, parce que ces substances semi-élastiques protègent mal les fibrilles dentinaires qui s'irritent sous les pressions de la mastication.

Même si durant la préparation de la cavité, on prend toute les précautions pour éviter les chocs thermiques et mécaniques, il reste toujours le danger d'une irritation chimique. Des recherches ont démontré, que même si seulement la moitié de la couche normale de dentine est enlevée, il y a danger qu'une infiltration de la pulpe résulte d'une exposition de la pulpe aux liquides de la bouche après un certain temps. Les expériences indiquent que non seulement la dentine et les odontoblastes sous-jacents sont affectés, mais que le contenu des cellules pulpaires augmente. Et, plus la cavité voisine la pulpe, plus l'exposition à la salive augmentera la sensibilité. L'irritation chimique qui souvent menace la pulpe résulte surtout d'un malaxage et d'un emploi impropre des ciments. Ceci se produit lors de la reconstitution avec un ciment ou du scellement d'un obturateur. Pour éviter ce danger il faut éviter de déshydrater la cavité par l'usage de chloroforme ou d'alcool. Le chloroforme et l'alcool en déshydratant la dentine, la rend spongieuse et susceptible d'absorber l'excès de liquide du ciment qui irritera la pulpe.

La cavité doit être légèrement badigeonnée de phénol et très bien asséchée ensuite. Si on observe scrupuleusement les proportions de poudre et de liquide et si on malaxe lentement le ciment, on évitera la génération de chaleur suscep-

tible d'endommager la dentine et la pulpe. Si un excès de liquide est laissé dans le ciment, après cristallisation de celui-ci, le cytoplasme des fibrilles dentinaires absorbera cet excès de liquide qui attaquera la pulpe. D'où la nécessité du vernis protecteur et de la reconstitution qui éviteront une telle absorption en scellant les tubules dentinaires.

L'irritation chimique peut aussi mettre la vitalité d'une pulpe en danger même si aucune cavité n'est préparée. Ainsi en est-il dans les cas de récession de gencive exposant le ciment de la dent. Dans ces cas, la dentine protégée par une mince couche de ciment est altérée et la pulpe peut en subir de graves dommages à la suite d'une exposition aux agents chimiques de certains aliments.

Un autre danger d'irritation de la pulpe résulte d'une exposition de celle-ci ou de la dentine à l'action de la flore bactérienne buccale. Sur ce point, les auteurs ne s'entendent pas entièrement à savoir si la bactérie envahit le tubule dentinaire lorsque la dentine est exposée à la salive ou si l'action bactérienne n'est que superficielle. On admet en général que la bactérie ne pénètre pas dans la dentine à moins que la dent soit décalcifiée à l'avance. Cependant, le danger d'infection demeure toujours dans un cas comme dans l'autre. L'action des bactéries sera d'autant plus grande que la résistance du patient sera faible, d'où la nécessité de réduire au minimum le nombre des bactéries à la surface de la cavité avant d'insérer ou de cimenter une obturation. Lorsque la décoloration de la dent n'engage pas l'esthétique l'on recommande de badigeonner la cavité avec une solution de nitrate d'argent et ensuite d'appliquer de l'eugénol. Sur les dents antérieures l'usage du phénol et du vernis protecteur constitue une prévention précieuse. Toujours l'on devrait prendre comme principe d'éviter de souiller la dent de salive ou de la contaminer en aucune façon.

La membrane péri-dentaire

La membrane péri-dentaire est constituée par une couche de tissu située entre

la paroi alvéolaire et la racine de la dent; elle s'étend aussi sur la couronne jusque dans la région de la dentine. Cette membrane renferme surtout des fibroblastes et des fibres collagènes disposées en faisceaux ondulés, aussi des vaisseaux et nerfs, jamais de fibres élastiques. En dentisterie opératoire, tous les éléments de la membrane alvéolo-dentaire demandent des précautions opératoires; cependant entre eux nous devons davantage considérer l'arrangement et les fonctions des fibres péri-dentaires.

Les fibres péri-dentaires se divisent en trois groupes principaux. En superficie, nous rencontrons les fibres gingivales fixant la racine à la profondeur de la gencive. En dessous de celles-ci, les fibres transeptales allant d'une alvéole à l'autre. Enfin les fibres alvéolaires comprenant des fibres horizontales et obliques et, à l'apex, un dernier groupe qui relie l'apex à l'alvéole. Toutes ces fibres péri-dentaires sont ondulées, repliées sur elles-mêmes, mais non élastiques. Quand une dent se meut dans son alvéole, cela ne vient pas de l'élasticité des fibres péri-dentaires mais du fait qu'elles se déplient, s'allongent. Aussitôt que la force agissant sur la dent disparaît, elles reprennent à nouveau leur état d'ondulation et reviennent à leur longueur initiale. Les fibres péri-dentaires se disposent dans un arrangement résultant des forces agissant sur la dent; quand la direction et le degré des forces agissantes changent, les fibres péri-dentaires se réajustent aux nouvelles conditions.

La membrane péri-dentaire attache la racine de la dent à l'alvéole; par ses vaisseaux sanguins elle nourrit le ciment; par ses fibres nerveuses, elle lui donne une faculté sensorielle, mais sa fonction principale reste une fonction de support. Elle reçoit et absorbe les forces résultant de la mastication, et ce sont les fibres obliques qui offrent la meilleure résistance à ces forces, pourvu que ces dernières soient dirigées dans l'axe de la dent. Des forces horizontales ou latérales, excédant les limites physiologiques, compressent et écrasent la membrane entre l'os et la dent; il en résulte une

résorption de l'os et une nécrose des tissus mous. Si ces dommages ne sont pas trop grands, l'organisme les réparera et la dent pourra continuer sa fonction normale.

L'épaisseur de la membrane péri-dentaire varie selon l'usage de la dent. Si la dent est en fonction normale, son épaisseur ira de 0.20 à 0.23 mm. Quand l'occlusion est forte, elle s'épaissit et va de 0.30 à 0.33 mm. Par ailleurs, une dent en sous-occlusion a une membrane péri-dentaire plus mince, de 0.10 mm. environ, et du ciment nouveau s'ajoute. Quand une telle dent, hors de sa fonction normale, est remise en occlusion au moyen d'un obturateur, il faut éviter de lui faire subir une trop grande force, car il pourrait y avoir irritation et nécrose de la membrane péri-dentaire.

Durant les opérations de dentisterie, il faut toujours porter un soin particulier à la membrane péri-dentaire en évitant de détruire les fibres péri-dentaires surtout les fibres gingivales qui seront les plus exposées.

La dégénérescence de la membrane péri-dentaire peut provenir de multiples causes locales ou d'ordre général. Ainsi une articulation mauvaise, une irritation chimique, une mauvaise alimentation ou certaines maladies organiques causeront de nombreux cas de maladies péri-dentaires. Les maladies de la membrane péri-dentaire suivant les traitements de dentisterie opératoire résultent surtout de la présence d'une irritation mécanique.

La préparation de la cavité et le scellement du bloc obturateur n'irriteront que rarement la membrane péri-dentaire, si les précautions normales sont prises. L'irritation mécanique résultant d'une obturation viendra surtout de l'état dans lequel est laissé et fini l'obturateur. En premier lieu, il sera essentiel que l'occlusion entre la dent obturée et la dent antagoniste soit respectée ou rétablie. Une dent devenue en surocclusion à la suite d'une obturation recevra une part beaucoup trop grande des forces de mastication. Une telle occlusion traumatique amènera invariablement une inflammation péri-dentaire qui pourra en certains

cas causer la perte de la dent. L'occlusion doit être respectée non seulement dans la position centrique des dents, mais dans toutes les directions où la mandibule se meut. D'où la grande importance à bien finir l'obturateur, à lui sculpter une morphologie en accord avec la dentition du patient, et à éviter tout surplus occlusal. Dans le cas opposé où les dents sont laissées dans un état d'hypofonction ou de non occlusion, l'atrophie menacera la membrane péri-dentaire. En effet, la membrane péri-dentaire a besoin d'une stimulation physiologique et fonctionnelle pour demeurer normale. Une sous-occlusion diminuera la circulation sanguine et produira une membrane péri-dentaire pathologique, atrophiée.

En dentisterie opératoire, après le rétablissement de l'occlusion, l'obturateur doit également reconstituer les points de contacts proximaux. La valeur et durée de l'opération en dépendent beaucoup. Si le point de contact proximal est respecté ou reconstitué, la dent restera fixée dans son alvéole. Sinon, les diverses pressions de la mastication, de la langue et des autres muscles feront dévier la dent de son axe normal et l'occlusion en général sera détruite. D'autre part, le manque de contact proximal créera des endroits où les aliments seront pressés, emmagasinés au niveau de la gencive et atteindront la membrane péri-dentaire en causant une irritation et une inflammation des autres tissus péri-dentaires.

La gencive

La gencive et les autres tissus mous avoisinant la dent seront également affectés à la suite de traitements impropres. Encore ici, il s'agira d'irritants mécaniques résultant d'un finissage inadéquate du bloc obturateur. Le point le plus important à surveiller est la paroi gingivale de la cavité qui est immédiatement en contact avec ces tissus. Quoique les opinions ont été controversées, on reconnaît aujourd'hui que cette paroi gingivale doit finir sous la crête de la gencive, à demi chemin entre le fond de la crevasse gingivale et la crête de la

gencive. Pour les patients très jeunes, de 20 ans ou moins, cette paroi peut finir au-dessus de la gencive, car pour de tels patients, les obturations sont plutôt temporaires et appelées à être remplacées dans l'avenir. Une obturation finissant ainsi sous la gencive élimine les dangers de carie nouvelle à cet endroit et de rétention des aliments qui irriteront les tissus voisins.

De même, à la paroi gingivale devra-t-on surveiller l'adaptation de l'obturateur et éviter tout surplus gingival. Le surplus gingival en plus de retenir les aliments, sera constamment un irritant pour les muqueuses et pourra produire des dommages parfois considérables.

Conclusions

L'histologie des tissus structuraux de la dent constitue un facteur très précieux aux travaux dentaires. Cette étude devrait se faire d'abord par une observation microscopique attentive, puis par une pratique en regard de ces structures. L'expérience permettra en peu de temps la préparation de cavités meilleures, élaborées plus rapidement et avec plus de sécurité.

Le traitement de l'émail d'après sa structure histologique donnera à la cavité des parois plus solides, plus résistantes et plus rétentes. Le bloc obturateur adapté à une telle cavité résistera davantage aux chocs de la mastication et préviendra la récurrence de la carie. Et cette attention que le dentiste portera à tailler l'émail selon ses exigences histologiques, loin de compliquer son travail, le facilitera. Dans un temps moins long, il pourra enlever la carie et tailler les parois de la cavité. De même, le patient bénéficiera de ce mode d'opération, car la douleur sera diminuée et le temps d'opération beaucoup moins long.

La dentine, à cause de sa structure histologique et de son étroite relation à la pulpe, demande le plus de précautions possibles. Toujours, il faudrait la préserver de ce qui pourrait l'irriter ou l'infecter en se rappelant l'existence de ses éléments organiques, sa grande sensi-

bilité et le mécanisme de formation de la dentine secondaire.

En premier lieu et surtout, le dentiste doit-il opérer en se rappelant que la dent est un organe vivant et souvent susceptible aux moindres traitements non appropriés. Même si les tissus avec lesquels il vient directement en contact semblent sans vie et à l'abris des fausses manœuvres, la vérité est que sous ces structures calcifiées existe une pulpe vivante, délicate et directement soumise aux chocs opératoires. Une opération faite dans les conditions idéales la préservera de l'inflammation, de l'infection et des nombreuses autres complications durant et après les travaux dentaires.

Le premier but de la dentisterie opératoire, nous le savons, est de rétablir la dent dans des conditions physiologiques aussi normales que possible. Par l'obturation, la dent devra trouver à nouveau ses formes anatomiques, sa résistance à la mastication et une garantie contre la carie récurrente et les troubles inflammatoires. Il va de soi que seule une connaissance parfaite des structures internes et externes de la dent amènera le meilleur succès. Ainsi, l'obturation sera plus résistante, plus retentive et la vitalité de la pulpe sauvegardée.

La dentisterie opératoire n'est donc pas simplement un ensemble d'opérations techniques. Elle est une science étroitement apparentée aux sciences médicales et pharmaceutiques et traite un organe vivant qui a son rôle physiologique bien défini. Tout état pathologique de la dent devrait aussitôt recevoir le traitement adéquat afin d'éviter les complications éventuelles et préserver le bien-être de la santé en général.

BIBLIOGRAPHIE

- G. V. Black, A.M., M.D., D.D.S., Sc.D.:
 "Opérative Dentistry"
 Hoskins & Bevelander:
 "Outline of Histology"
 Tylman, S.D.:
 "Theory and Practice of Crown & Bridge Prothesis"
 S. C. Miller
 "Textbook of Periodontia"

Nouvelles de l'Association

Terre-Neuve nomme un nouveau représentant.

A la réunion annuelle de l'Association dentaire de Terre-Neuve, le docteur F. A. Janes a été nommé représentant de cette province au Bureau des Gouverneurs de l'Association dentaire canadienne. Le docteur Janes demeure à Corner Brook et il succède au docteur W. L. Goodwin.

Le Conseil d'Enseignement dentaire remet à plus tard le classement des écoles dentaires.

A la réunion des membres du Conseil d'Enseignement dentaire tenue les 21 et 22 juin dernier, on a étudié le rapport de l'équipe qui avait entrepris une enquête dans les facultés dentaires canadiennes. Ce rapport résumait les constatations faites au cours de leurs visites aux écoles dentaires durant les quatre dernières années. La principale recommandation du rapport demandait de remettre à deux ans l'accréditation des facultés. Cette requête fut approuvée à l'unanimité. Tous les doyens, qui assistaient à la réunion, s'accordèrent pour louer le travail de l'équipe d'enquête. Le Conseil fera connaître à la réunion du Bureau des Gouverneurs ce qu'il compte faire dans l'avenir.

Le docteur Shailer Peterson, secrétaire du Conseil d'Enseignement dentaire de l'Association dentaire américaine assistait à l'assemblée.

Le Bureau National d'Examen dentaire se réunit à Ottawa.

Les 5 et 6 juillet, les membres du Bureau national d'Examen dentaire se sont réunis pour la deuxième fois à Ottawa. Le but principal de cette réunion était d'examiner les rapports du premier examen tenu par cet organisme. Environ 80 candidats s'étaient présentés à ces examens. Un rapport complet de ces examens paraîtra prochainement dans le Journal.

Démission du docteur Routley.

A son retour de la première grande guerre, le docteur Routley devint secrétaire de l'Association médicale de l'Ontario. En 1920, il fut élu assistant-secrétaire de l'Association médicale canadienne et, en 1923, secrétaire général. Il occupa les deux postes jusqu'en 1938, où il consacra tout son temps à l'Association médicale canadienne. A la réunion générale de l'Association médicale canadienne tenue récemment à Vancouver, il donna sa démission et fut élu président-élu de l'Association. Avec les années, le nom du docteur Routley devint synonyme de la médecine du Canada. Sa réputation a franchi les frontières du pays puisqu'il fut l'un des fondateurs de l'organisation mondiale de la médecine. Grâce à ses activités internationales, la Médecine

canadienne jouit d'une excellente réputation dans le monde entier.

L'Association dentaire canadienne rend hommage aux services qu'il lui a rendus. En toutes circonstances, son Association et la nôtre ont joui d'un esprit rare de collaboration et d'assistance mutuelle. A plusieurs reprises, il nous a dit: "Ce qui peut vous être utile nous l'est également à nous aussi": Non seulement son Association mais une foule d'autres aussi ne pourront plus profiter de ses idées constructives. Le docteur Arthur Kelly qui est assistant-secrétaire depuis plusieurs années lui succède comme secrétaire général.

Résolution de la Croix-Rouge canadienne.

A la réunion annuelle de mai dernier, la Croix-Rouge a passé la résolution suivante, qui nous est parvenue:

"Le Conseil central de la Croix-Rouge canadienne tient à exprimer sa gratitude aux professions médicale et dentaire, aux garde-malades et aux instituteurs pour l'appui et les conseils qu'ils ont continué de donner aux oeuvres de la Croix-Rouge au cours de l'année dernière."

Quarante-deuxième réunion annuelle de la Fédération dentaire internationale.

Quelques 24 pays étaient représentés à la réunion de la F. D. I. tenue à Scheveningen, Hollande, du 8 au 13 juin. Le Brigadier Wansbrough représentait l'Association dentaire canadienne. Le docteur Owen Oliver, de Nashville, Tennessee, fut réélu président pour un troisième terme. Au delà de 1,000 délégués suivirent les délibérations du congrès. Le docteur Hillenbrand, secrétaire de l'Association dentaire américaine et un contingent de cette Association ont assisté au congrès. La réunion de 1955 aura lieu à Copenhague et celle de 1956, à Zurich. En 1957, la réunion annuelle sera tenue conjointement avec le congrès dentaire international à Rome (du 3 au 10 août). Les associations suivantes ont été acceptées comme membres actifs: l'Association des Licenciés et Dentistes universitaires de Belgique, l'Association dentaire malayenne, l'Association dentaire de Burma, la Société Stomatologique de Grèce et la Suomen Hammaslaakariliitto de Finlande.

Nouvelle édition de "Comment brosser vos dents".

Cette publication s'est avérée des plus populaires. Un membre de l'A. D. C. déclare: "Autrefois, je devais consacrer une demi-heure pour expliquer à un patient comment se brosser les dents; maintenant avec ce feuillet, je le fais mieux dans 5 minutes". Prix: un dollar pour 100 copies. On peut se les procurer en écrivant à

l'Association dentaire canadienne, 234 rue St-Georges, Toronto.

Numéro du Journal demandé.

La livraison de juin 1954 du Journal de l'A. D. C. se fait rare au secrétariat de l'A. D. C. Ceux qui peuvent en disposer rendront service à l'Association en l'envoyant au secrétariat.

NOUVELLES

—Sugar Information Inc., organisme chargé des relations extérieures pour l'industrie du sucre, vient de lancer une campagne d'annonces qui durera trois ans et qui coûtera quelques \$1,800,000. Le principal argument invoqué dans cette campagne sera que le sucre n'engraisse pas et même qu'il peut aider à abaisser le poids.

—Selon le Bureau of Economic Research and Statistics de l'Association dentaire américaine, la demande du public pour des traitements dentaires a presque doublé en moins de vingt-cinq ans. Cette constatation est le fruit d'une enquête entreprise dans tous les Etats-Unis.

—Une édition révisée du feuillet "Notions

sur la fluoruration" a paru au mois d'août. On peut s'en procurer une copie gratuitement.

—On peut obtenir une copie additionnelle du Bottin de 1954 moyennant un dollar. On vient d'en expédier une copie à tous les membres de l'Association.

—Le rapport sur le rendement de la clinique-modèle industrielle dentaire vient d'être publié par la division dentaire du Ministère de la Santé Nationale et du Bien-Etre Social.

Acquisitions récentes de la bibliothèque.

APPLEGATE, O. C. Essentials of removable partial denture prosthesis. 1954. 323p. illus.

KNAPP, K. W. Precip de bridges fixes. 1953. 172p. illus.

RHODES, R. E., ed. Curative hypnosis. 1952. 274p.

SKINNER, E. W. The science of dental materials. 1954. 456p. illus.

U.S. NAVAL DENTAL SCHOOL. Handbook for general dental technicians. 1952. 560p. illus.

Les rayons X en stomatologie

par H. CROCQUEFER et J.-H. MARCHAND

La collaboration du stomatologiste et du radiothérapeute n'existe le plus souvent que dans la lutte anticancéreuse, et rares sont les lésions inflammatoires de la bouche et des dents pour le traitement desquelles on fait appel aux rayons X.

Notre expérience de ces 10 dernières années nous a cependant montré que très souvent leur emploi est parfaitement justifié.

Il est évident qu'il ne s'agit pas de demander à la röntgentherapie de se substituer à la chirurgie dentaire, mais ces deux disciplines peuvent souvent s'épauler; soit que les rayons X préparent le chemin à la chirurgie, soit qu'ils en complètent et en accélèrent le résultat. Enfin, ils peuvent parfois limiter l'acte chirurgical, minimisant ainsi les séquelles et les difficultés d'appareillage.

Il s'agit ici d'une radiothérapie non destructive, à petites doses, qui contribue uniquement à lutter contre l'infection.

Si les applications sont faites très précocement, on assiste fréquemment à une résolution complète; mais le plus souvent l'action des rayons X doit se

limiter à localiser l'infection, à collecter le pus et à permettre ainsi de réduire l'acte opératoire.

Une indication importante est l'accident de la dent de sagesse inférieure. La réaction inflammatoire dépasse les limites de la cavité buccale, et l'on voit s'installer un trismus très douloureux, empêchant totalement l'ouverture de la bouche. Ces phénomènes inflammatoires gênent considérablement l'examen et l'intervention.

Le trismus cède le plus souvent à une ou deux applications de rayons X. En même temps que la douleur diminue, les œdèmes se localisent au niveau de la dent malade. La radiothérapie prépare donc le terrain à l'intervention.

D'autres fois nous sommes trouvés en présence de phénomènes inflammatoires qui ont suivi une avulsion dentaire.

Monsieur O—Charles.

Dent de sagesse inférieure gauche extraite le 14 avril pour parulie.

Extraction facile, suites opératoires normales. Il persiste une myosite du masséter gauche, provoquant un trismus très douloureux. Il est impossible de passer un crayon entre les incisives.

Radiothérapie: 1^{re} séance (le 19-4-50): 50 r. Réaction assez vive.

48 heures plus tard, grosse amélioration; l'ouverture de la bouche est suffisante pour permettre l'alimentation et est à peine douloureuse. 2^e séance: 100 r.

Le malade est revu au bout de 5 jours. Il ne persiste plus qu'une légère gêne. Une 3^e séance de 100 r. donne une guérison complète.

Madame Jar—Henriette.

Phlegmon du maxillaire inférieur en janvier 1951. Traité médicalement. Ablation de 2 dents de sagesse inférieures en mars.

La malade continue à souffrir du côté gauche, ouverture d'un abcès et drainage. Ablation de la 2^e molaire inférieure gauche.

Au bout de 8 jours (le 3-5-1951), la malade, souffrant toujours, vient consulter l'un de nous. Elle présente une induration presque ligneuse du voile du palais; une incision ne laisse écouler qu'une sérosité. On institue le traitement radiothérapique.

6 séances de 150 r. ont été faites en 15 jours, amenant la disparition des phénomènes inflammatoires, et la cicatrisation de la plaie.

Madame Anc—Marianne.

Souffrant depuis longtemps de la 1^{re} molaire gauche, en subit l'avulsion en février 1952.

A la suite de l'intervention, il persiste une douleur sourde au niveau du maxillaire inférieur sur laquelle se surajoutent des crises très douloureuses, à début très brutal, presque fulgurant, dans le domaine des nerfs maxillaire supérieur, maxillaire inférieur.

Les douleurs n'irradient jamais dans le territoire de l'ophtalmique.

Il ne s'agit pas d'une névralgie faciale essentielle, mais de névrite inflammatoire.

Le traitement mis en œuvre a été la radiothérapie par un champ large, recouvrant tout le territoire intéressé.

10 séances (du 10-11-52 au 1-12-52) représentant une dose totale de 1.500 r., viennent à bout de cette poussée inflammatoire.

Les observations qui vont suivre concernent les maladies dont les dents étaient correctement traitées, les canaux parfaitement obturés, et qui présentaient à l'apex des poussées inflammatoires. La radiothérapie a permis d'éviter de nouvelles interventions.

Le Commandant de la B—

Le 13 janvier 1953, vient trouver l'un de nous pour un petit abcès de la voûte palatine qui s'ouvre à 1 cm. de la ligne médiane et

qui est en rapport vraisemblablement avec la 2^e prémolaire gauche. Cette dent n'est pas douloureuse à la percussion. La palpation de l'apex n'est pas sensible, bien que cette région soit légèrement rénitente à la face palatine. Cet état persiste depuis 2 ans.

La radiographie montre une petite zone de raréfaction à l'apex. La dent est bien obturée. Le malade reçoit, en 10 jours, une dose de 850 r., par un petit champ localisé sur la région de l'apex.

A la fin des irradiations la suppuration est tarie.

2 mois plus tard, la cicatrisation est complète.

Madame Mo—Aline.

Ostéo-périostite et granulome à l'apex de G5.

Cette dent, couronnée, sert de point d'appui à un bridge. Elle est légèrement mobile, sensible à la percussion: La palpation révèle une zone douloureuse au niveau de l'apex. On voit sourdre une sérosité purulente du ligament alvéolo-dentaire.

Le 19 mars 1953, 1^{re} séance de 100 r. A la suite de laquelle la suppuration augmente ainsi que la sensibilité.

6 séances de 150 r. amènent progressivement la disparition totale de la suppuration et de tous les phénomènes inflammatoires.

La dent a pu être conservée, ainsi que l'appareil dentaire.

Madame de G—Marie-Louise.

A la suite d'un accident d'auto, présente: au maxillaire inférieur droit une fracture du rebord alvéolaire, partant de la 2^e prémolaire et atteignant le niveau de l'incisive médiane. Le déplacement du fragment osseux est minime. Les dents sont très mobiles. On note dans l'alvéole un fragment important de la racine de la 1^{re} prémolaire, brisée dans l'accident.

Au maxillaire supérieur, fracture limitée à la partie antérieure du rebord alvéolaire.

Au niveau des parties molles, nombreuses plaies contuses, en particulier la lèvre inférieure a été perforée par la 1^{re} prémolaire. Toute la région est le siège d'une suppuration abondante.

La malade reçoit du 3 mars 1948 au 25 mars 1948 une dose totale de 700 r.

En 7 séances (3 semaines), on parvient à faire disparaître tous les phénomènes inflammatoires. Les plaies cicatrisent parfaitement.

Revue 5 ans plus tard, la cicatrisation est parfaite. Les dents sont conservées, et le fragment de racine de la 1^{re} prémolaire a permis la pose d'une dent à pivot.

Ces observations ont été choisies parmi la centaine de cas traités, pour montrer la diversité des possibilités de la radiothérapie anti-inflammatoire.

Nous appliquons cette technique depuis une douzaine d'années. L'expérience que nous avons des affections cutanées nous incitait à la prudence, car ici l'infection a son origine dans une cavité osseuse, fermée de toute part, et nous pouvions craindre que l'exacerbation qui accompagne le traitement, le rendrait difficilement supportable. Aussi, notre premier cas, traité en 1939, fut-il un abcès préalablement incisé. Le résultat fut particulièrement heureux.

Nous élargimes les indications.

La carie dentaire, la pulpite même accompagnée de granulome et de suppuration à l'apex ne sont pas justiciables de cette thérapeutique. En effet, l'intervention stomatologique: trépanation de la dent, curage des canaux, amènent la guérison, et les rayons X n'éviteraient pas cette intervention. Mais lorsque les phénomènes inflammatoires apparaissent au niveau d'une dent correctement traitée, et qu'il y a intérêt à ne pas réopérer, ils sont particulièrement indiqués, soit qu'il s'agisse d'une inflammation, reliquat de l'affection initiale, soit qu'on se trouve en présence de poussée infectieuse d'origine générale, se localisant au niveau d'une dent.

Tous les degrés de cette infection ont été traités: la simple arthrite, les abcès apicaux, les ostéo-périostites, les abcès sous-périostés, et les complications péri-maxillaires depuis la simple fluxion jusqu'au phlegmon. Nous insisterons tout particulièrement sur les complications des accidents de la dent de sagesse.

Le granulome, tumeur inflammatoire, loin d'être une contre-indication fond sous l'influence de la radiothérapie.

L'une de nos malades présentait un granulome suppuré, dont le pus s'était frayé un chemin entre la racine et le ligament. Cette fistulisation, si rebelle, s'est parfaitement tarie, sous l'influence du traitement. La guérison a été complète.

Les irradiations sont transcutanées. Nous n'employons jamais les techniques endo-cavitaires.

Comme le siège de la lésion est assez superficiel, nous utilisons une radio-

thérapie semi-pénétrante (150 KV filtré sur 0,5 de Cu + 2 Al). La dimension des champs est variable: ils doivent recouvrir toute la zone enflammée, en la dépassant de 2 cm en tous sens. La dose dépend de l'acuité de l'infection et de la précocité du traitement.

S'il s'agit d'une poussée aiguë, prise d'une manière très précoce, alors que la radiographie ne montre aucune anomalie osseuse, une ou deux séances peuvent suffire: la première de 50 r (elle est suivie d'une réaction douloureuse, dont il faut avertir le malade). La deuxième, faite 48 heures après, amène la guérison.

Si l'on intervient plus tardivement, alors que l'examen radiographique révèle une zone de raréfaction osseuse à l'apex, ou l'image d'un granulome, le traitement devra être prolongé. Il n'est pas rare d'avoir à faire une dizaine de séances.

On peut obtenir une résolution complète, mais d'autres fois, on voit se former une collection purulente, se faisant jour sous forme d'abcès périosté. Il est indispensable de drainer dès que la fluctuation est manifeste. La guérison est alors rapide.

Si la lésion est plus ancienne, fistulisée, il faut prendre la technique des suppurations froides, c'est-à-dire des doses plus importantes: 150 r par séance, tous les deux jours, jusqu'à une dose totale de 1.200 à 1.500 r. Dans un premier temps la suppuration augmente. Puis le pus devient moins épais, pour n'être plus qu'une sérosité.

Cette sécrétion séreuse se poursuit parfois longtemps, même après la fin des irradiations. Elle se tarit, et l'on obtient une bonne cicatrisation. Cette même technique s'adresse aussi aux lésions traumatiques suppurées.

La radiothérapie anti-inflammatoire est donc un adjuvant que l'on ne saurait négliger en stomatologie. L'association de la chirurgie et des rayons X, dans bien des cas, se révèle comme une technique précieuse pour le praticien et pour le malade.

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Journal

OF THE CANADIAN DENTAL ASSOCIATION

Advances in dentistry*

by GORDON M. JACKSON, D.D.S., Hamilton, Ontario

To define dentistry as it meets conditions existing today and those which will be met by the dental profession of tomorrow, one must look beyond any meaning found in a standard dictionary. What appears to be an all inclusive definition is one published in the April, 1953, issue of the Journal of the Ontario Dental Association and is the conception of Dr. Ashley W. Lindsay, editor of the Journal.

"Dentistry is that division of the health sciences and services which has as its special objective the care of the teeth and jaws with their associated structures and tissues. This care consists of the prevention of disease and of derangements; the alleviation of pain; the promotion of the development and of the growth of the teeth, their related bones and surrounding soft tissues; their preservation in function; their removal when defective and when diseased; their rearrangement and/or their treatment through medicinal, surgical or other biological means.

"Particularly, dentistry is responsible through the employment of surgical and prosthodontic procedures to prepare for and apply odonto-prosthetic substitutes for the repair or the restoration of lost teeth and their supporting structures."

To better understand this modern concept of dentistry as presented by Dr. Lindsay is to know something of the Advances in Dentistry through the centuries.

A study of the oldest literature in existence, that of the Babylonian texts of 3000 B.C. inscribed on bricks seen in the British Museum and in other collections, gives evidence that dental disease was known and recognized from very early times. Discoveries of human teeth decorated with precious stones, indicate that among the ancient inhabitants of Central America, Mexico and Ecuador, the art of inlaying teeth was early practised. A display in an Italian museum of gold splints and bands made by the Etruscans 800 years B.C. designed to hold loose teeth in their place and also to carry a few artificial ones made of a marble-like substance, show that attempts were made to replace lost teeth from a very early pe-

*Presented to the Torch Club, Hamilton, Ontario, May 10, 1954.

riod. Writings of the 5th Century B.C. attributed to the great physician Hippocrates, in which extraction of teeth was recommended only when teeth were decayed or loose, indicate a reluctance to perform what was considered to be a dangerous operation—an attitude which may be traced through all surgical writings up to recent times.

With the passing of the centuries came the expansion in Europe of the powers of the Church in matters of healing. Church heads included a knowledge of herbs in their teaching. Early in the 11th Century A.D. all departments of healing were taken over by the Church. But a papal edict in 1163 forbade the clergy to interfere in any matters involving the shedding of blood—and relegated the practice of surgery to the barber, or to any menial who wished to try his hand at the art. Thus surgery was cast into disrepute and a class of men known as barber-surgeons came into being.

For the next four or five hundred years, regardless of the existence of schools and universities in Europe, surgery and medicine remained in a very undeveloped state. In France, the preeminent physicians merely prescribed medicine and gave advice; the surgeons dressed wounds with poultices and plasters, but performed no operations; the barber-surgeons were considered no more than servants of the former, many being recruited from the ranks of bloodletters and toothdrawers of the time. Contemporary literature of these centuries indicates that the toothdrawer was the only practitioner courageous enough to extract teeth. To avoid the use of forceps for the removal of teeth all sorts of weird theories and devices were recommended. One idea prevalent at the time was that the rubbing of the gums with the fat of a green frog would make all the teeth fall out.

One of the greatest surgeons of the 14th Century in Europe, Guy de Chauliac, taught that dental caries was due to worms in the teeth which fed on milky and sticky foods, which foods, he said,

should for that reason be avoided. The worm theory in relation to dental caries had been accepted in other countries from ancient times, but de Chauliac's was a new approach derived from his own clinical experience. However, of greater interest to dentistry is the fact that, in one of his Latin manuscripts, he used the term "dentista" to describe specialists for the teeth as a class other than barbers and surgeons. "To these were to be relegated all operations belonging to the teeth such as cleaning, filling and the insertion of new teeth, whether human or of bone, and extraction, which last operation he recommended should be performed under the supervision of a medical doctor."

With the Renaissance, which gradually spread northwards from Italy through Western Europe during the 15th and 16th centuries, came critical inquiry and free speculation into every department of life, resulting in prolific production in the arts, literature, politics, religion, and science. But religious interference hampered scientific research because workers feared publication of their studies. And so the quack flourished for the next four hundred years—preying upon the superstitions of the people.

By the beginning of the 18th century physicians had obtained a knowledge of human anatomy and the action of some of the principal organs of the body, but there was no knowledge of what disease might be, or what caused it. Preceding the outstanding development of the 19th century, physics and anatomy were the only sciences which had reached any degree of perfection. Most of the biological sciences were in their beginning or practically non-existent—as with chemistry, physiology, microscopy and bacteriology. In Dentistry, which was largely unorganized, there were well-trained leaders. But they were concerned more with technical procedure than they were with investigation, so their science was derived mostly from workers outside the field of dentistry.

In the late 16th century Eustachius, a

surgeon, anatomist and teacher, had been the first to publish a book entirely devoted to the anatomy and development of the human teeth. His observations were carefully made with only the aid of magnifying glass as was also the case with all early observations in general human anatomy. Practically everything known today of the structure of the human teeth and their physiological changes that can be learned by gross inspection was embodied in his findings. He had access to numerous cadavers of all ages in his connection with Roman hospitals. He and his co-workers traced the nerves and blood vessels into "the cavity of the tooth." At a later date the best instructed dentists used this source of information, and by the end of the 18th century comparative dental anatomy became the subject of much research.

That there should be special lectures on the subject of dental practice, was first suggested by John Hunter of England, whose name is important in the history of medicine because it was he who transformed surgery into a science from merely a mechanical art. He persuaded a dentist, William Rae, son of an Edinburgh surgeon, to give the first lectures in his house in 1782. Rae's career was cut short by a riding accident, but one of his keenest students, Joseph Fox, succeeded him to become the first of a long line of teachers to give lectures on dentistry at Guy's Hospital, London, in 1803—thus laying the foundation of dental education in England. Possibly it should be stated here that separation of surgeons and barbers had taken place in England about a half century earlier, the surgeons having taken on a separate existence of their own, later to become known as the Royal College of Surgeons. And still later the Royal Society was to be formed which was to give fresh impetus to science in its publicizing of the important events of the revolution in the science of medicine which came with the development of the microscope, events such as—the immediate foundation of the science of his-

tology which arose out of the microscopic study of all kinds of tissues, animal and vegetable—and the later development of the science of bacteriology.

In France, dental education had been founded a century earlier than in England, dental surgeons and dentists being distinguished from physicians and surgeons or barber-surgeons from the year 1699. Pierre Fauchard, who is acknowledged by all as the father of dentistry, in 1728 published a learned manuscript which was a detailed and comprehensive work dealing in a scientific manner with all that concerned the art of dentistry in the 18th century. Others who may have performed the operations which were described by Fauchard failed to communicate their findings to their fellows. In 1766 Jourdain, a dentist and distinguished surgeon, made a courageous effort to solve the problem of tooth development. He was the founder of oral surgery and stomatology, that is, a study of oral tissues, as a study of medicine. He described the feel of tissues between the fingers in various stages of calcification. But Jourdain, having no other aid to the naked eye except the magnifying glass, arrived at only the vaguest ideas of tooth development. Another dentist of Paris, Robert Bunon, achieved what is considered in dental history to be the only clinical research of importance before the 19th century. In his two great works published in 1743 and 1746 he established that "dystrophy or hypoplasia of the teeth is the result of high fevers, constitutional diseases and other children's diseases."

Transplantation of teeth was evidently common in this century, and in England received great stimulus from the previously mentioned John Hunter, who published his "Natural History of the Human Teeth" in 1771. Because of the unwholesome conditions produced in the mouths of those who wore bone or ivory dentures, attempts were made to transplant human teeth from one mouth to another. Hunter mistakenly regarded teeth as foreign bodies, and argued that a transplanted

tooth could be placed in the socket, that the gums would grow about it until it was firm, and so remain for years. Since careful inquiry into the health of the person supplying the tooth was necessary, Hunter recognized that the risks involved were great. For instance, it was found that syphilis could be transmitted by this procedure. Regardless, such transplantation of human teeth was fashionable for a while. The fee for the operation was excessive by reason of the need to compensate both the operator and the unfortunate victim who had just sacrificed one of his good teeth. In 1778 a book published by J. Channing entitled "Artificial teeth made of Calves Bones" was the first work entirely devoted to prosthetic dentistry—that is, crown bridge and denture work.

Certainly great difficulties must have been encountered in the manufacture of dentures because a method of taking an impression was not devised till late in the 18th century. One account states, "the early dentist measured the mouth with compasses, fitting the dentures at the chairside by painting the gums with color and scraping the bone or ivory to fit." How intolerable those dentures must have been!

In France, a chemist who was disgusted with the extent to which his bone denture had been reduced by oral fluids and food, tried to find a better material for it, and so hit upon the idea of porcelain, and had his bone denture copied in this material by a friend. It did not fit, so he placed the problem before another dentist, de Chemant, who discovered a means of preventing shrinkage of the porcelain. With controversy sharp over priority of invention, de Chemant left Paris for London and communicated to John Hunter and others the use of porcelain as a form of prosthesis, but unfortunately guarded jealously his secret of avoiding shrinkage. His porcelain base dentures were copied there, but his method of keeping them from shrinking remained a mystery; moreover, his dentures proved to be very friable. Thus, bone continued to be the favor-

ite base. Not long after this a dentist from Naples who practised in Paris produced from various mixtures of porcelain with which he worked, a single porcelain tooth, instead of the complete denture. It is interesting here to note that porcelain teeth are still used, though the recent development of plastics has also brought into common use teeth of that material, this latter development arising out of the research of recent years into the physical properties of materials employed in dentistry. The use of gold as a denture base followed porcelain and bone. At first, crown portions of human teeth, cut off at the neck and having their pulp chambers cleared, were set on pins which were rivetted to the gold base. Most of the metals used in early dentistry were taken over from the jewellers very much as they used them in their trades, with practically no study made of them.

In Europe, despite the progress which had been made in France and England in the 18th and 19th centuries, it was difficult for dentistry to attain the status it rightfully deserved because of prejudices which existed amongst men who practised the medical arts, prejudices which stemmed from their desire to maintain control of treatment in a field which they had coldly neglected, if not feared through the centuries. In France, where dental schools were established in 1839, examinations were conducted by physicians and surgeons, of whom Fauchard complained, that able as they may have been in their own field, were nevertheless incompetent to judge the ability of men to be passed in the dental arts. In England the College of Surgeons as late as 1843 considered those men who practised only the dental arts as seceders. So, it was in the United States of America that the new era in dentistry was to be launched, where, as with all other arts and sciences there were no old prejudices of long established schools to combat, and where was to be founded the three instruments of the profession today, instruments which provide strength and growth by

means of communication and inspiration, namely, the Dental School, the Dental Journal and the Dental Association. In 1839 the first school of dentistry was instituted in Baltimore where the first diploma in dentistry was issued—and the Journal and the Association established.

Other principal countries of the world subsequently followed the lead of America in the development of the School, the Journal and the Society. In England the first Dental School came in 1841 and the first Journal in 1843. In Germany the first Dental Society was organized in Berlin in 1846, and the first Dental Journal in the same year. In France most of the developments came sometime after 1847. In Canada the first dental school was organized in 1869 by the Royal College of Dental Surgeons of Ontario which was the Provincial Legal Body—the first monthly Journal commenced publication in Montreal in 1868—and the Canadian Dental Association was formally organized in 1902.

These developments coincided with the rapid expansion in sciences already established—and the recognition of new ones as histology, physiology, histopathology and bacteriology. In 1835 the compound microscope was sufficiently developed to become a convenient means for investigation. And, as with the study of other parts of the body, it made possible a more detailed study of dental anatomy. Thus dental research as we know it today gained its first real impetus. Enamel and dentin came under microscopic investigation. The study of minute changes in tooth development from earliest stages was now possible.

To this period also belong developments in the study of the technical problems of dentistry. Attempts were made to improve materials by both chemical and physical methods—filling of teeth having been always one of the crudest of dental operations. Many filling materials had been tried and discarded. Cement fillings were now improved. Amalgams gradually

evolved, improvements being made in the formula of the alloy having regard to all the requirements of the filling, until today as with most, if not all materials used in dentistry, they must meet with the specific requirements of a national bureau of standards. And here may be mentioned the name of G. V. Black of Chicago, a dentist to whom the profession is much indebted for his innumerable investigations into every department of operative work. First, as a chemist, he investigated the chemistry of tissues of the tooth, then later turned his attention to filling materials, particularly amalgams. He classified all kinds of cavities in the teeth, and then described the steps involved in their preparation and filling. He was also the first to show that mere mechanical mixtures of the metals were of no value. With perfection of methods of pressure casting which came at the end of the 19th century gold became used as a filling in the form of cast inlays. In 1907 Dr. Wm. Taggart of Chicago, in introducing a method of making gold castings by using a wax pattern of the inlay, revolutionized the practice of filling teeth with gold and also brought changes in some techniques employed in crown and bridge restorations.

The introduction of pressure casting and the introductions of new alloys which resulted from experiments in the field of metallurgy affected prosthetic dentistry to a marked degree. Partial dentures and bridges could be produced in a form strong enough to withstand the wear and tear of mastication and still to cover as little as possible of the oral tissues. Previous mention was made of gold as a denture base. That was swaged gold as distinguished from cast gold. Swaged platinum, cast aluminum and swaged stainless steel have all been tested and used. Cast chrome is a recent development in prosthetic work having appeal because of its strength, light weight and stainless appearance.

Other materials than metals have shar-

ed investigation and use. Gutta-percha was introduced as a base in 1847 by Edwin Truman, an American dentist, who, it may be recalled, was the first to overcome the difficulty of finding a protective covering for the Atlantic cable. When Good-year discovered the process of the vulcanization of rubber, vulcanite superseded gutta-percha to become the most favored base for the majority of dentures. Progressive research in this field has resulted in the production of stronger and lighter base materials which have also greater aesthetic appeal. Plastics first came into use in 1850 in the form of celluloid, which was marketed in England in 1870 and in America after 1900 when it began to replace vulcanite to some extent. Bakelite was the next advance, followed finally by acrylic resins which form the most popular base materials of today. Acrylics are far superior to any earlier developments due to their adaptability, permanence of color and life-like shading.

The introduction of plastics into operative dentistry as well as into prosthetics, has been one of the major developments in recent years. This, and other recent advancements in the field of dentistry have come concurrently with the discoveries of associated sciences.

Incidentally, at this point may be mentioned the fact that great advances in quality, quantity and adaptability of instruments used in dentistry paralleled the other technical developments in the field. The advent of electricity brought with it unlimited possibilities making possible the manufacture of more effective instruments and apparatus. With the discovery of the X-Rays by Rontgen in Germany in 1895 came a new aid to diagnosis which enabled for the first time a study of previously hidden conditions below the gums, and in turn provided for new methods of treatment in oral diseases.

From following these different advancements it is quite evident that research, which today we think of as being most closely related to investigations made in a scientific manner, is not the only means

by which dental science has progressed. Workers today are busy verifying theories of a century or more ago—earlier investigators merely having set forth their conclusions with only casual reference to the way in which they arrived at them. Speculation, or “acting upon hunches”, has also played a part in starting inquiries into a subject, particularly in the field of comparative dental anatomy and in the study of fossil remains where a clue might lead to a new concept. Much also has been learned from practical experience—quite apart from scientific knowledge—especially in procedures and techniques which have resulted in improvements from time to time in a large part of dental practice. Accidental discovery often supplemented trial-and-error methods as was the case with nitrous oxide anaesthesia.

In 1844 Wells, an American dentist, was the first man to make a practical application of anaesthesia using nitrous oxide. In a lecture given on nitrous oxide in New Haven, Connecticut, where certain members of the audience had been allowed to inhale the gas, he had observed that those under its influence seemed insensible to slight injuries caused by falling or staggering against pieces of furniture on the stage. When the first public attempt was made to demonstrate its use as an anaesthetic, the patient cried out though quite insensible to feeling. The onlookers were convinced that Wells had failed to anaesthetize and hissed him from the theatre. This experience depressed him so that he later took his own life. Before his death however, he communicated his knowledge to his friend and former dental partner, Wm. Morton, both men being keenly interested in finding something that would give relief in some of the more painful extractions which they encountered from time to time. After Wells' failure with nitrous oxide, Morton, on the lookout for an agent which would be safe to use, learned in a similar manner to Wells' finding, of the anaesthetic properties of ether, and de-

monstrated it successfully in 1846 in a Massachusetts hospital. No greater boon has come to mankind than the introduction of anaesthesia.

The first record of injection of a drug for local anaesthesia in a surgical operation came later in 1864 during the Civil War in the United States when an army surgeon successfully demonstrated its use. Unable to use a general anaesthetic in this particular operation, he injected morphine by means of a hypodermic syringe, the use of which he had heard, but had never seen in practice. Some fifteen years later, a New York dentist demonstrated the effectiveness of cocaine in the form of block anaesthesia, injecting a quantity of cocaine into the inferior dental nerve in order to observe its effect on a sensitive cavity in a lower molar. Investigations followed as to its use for the relief of pain in sensitive cavity preparations for which at first it was almost exclusively used. Later it came to be used for extractions. It was not until 1905 that Einhorn, a German chemist, discovered Novocaine, the injection of which proved to be much less toxic than cocaine. This type of anaesthetic allowed for painless operation, yet afforded entire cooperation of the patient. Modern research has still improved upon novocaine, so that today we have various local anaesthetics which afford more rapid and varying degrees of anaesthesia applicable to the type of operation to be performed.

In dentistry, as in medicine, many specialties have evolved out of the general field as the scope has widened and the need has presented itself. Three of the well developed specialties most commonly known to the general public are—Dental Oral Surgery, Orthodontics and Periodontics. It is not my intention, nor is it adequately within my powers, to enumerate the advances that have occurred in the specialty fields. It is sufficient to say that skilled investigators and workers in all such fields have made and continue to make invaluable contributions to den-

tal science. Most of the advances mentioned in this paper are pertinent to all of the specialties as well as to general dentistry.

In pausing to review the evolutionary stages of dentistry in various countries of the world, it may be concluded that the origin of dentistry as a profession was due "to the ingenuity and originality of its pioneers." It is logical to presume that its pioneers in Canada also did individualistic experimentation. Though a recommendation had been made in 1909 by the President of the Canadian Dental Association that a Committee for Dental Research be established, its appointment did not become a reality until 1916. This first Research Committee was to have representation from each of the Provinces with the Ontario section acting in an executive capacity. "This Committee recommended that each dental college be assigned a specific research problem to be worked out in their own laboratories." Despite "two world wars and a major depression" there has been fairly steady progress, until today there are thirty research projects under way in Canada with leadership supplied from all five Faculties of Dentistry of Canadian Universities and financial assistance rendered by the National Research Council for about half of them "with an annual budget of approximately \$35,000.00."

In the Province of Ontario, Dental Research until the last few years, has been essentially the work of one brilliant man, Dr. Harold K. Box, dating from the time he graduated in dentistry at Toronto in 1913. With a background of successive scholastic achievements in fields of research, his ingenious one-man leadership and work have served to lay a firm foundation for the \$300,000.00 five-year Dental Research Programme which was launched last year at the University of Toronto. This programme includes "the ultimate establishment of a modern, fully-equipped and skilfully-staffed research institute that will bring to the dentists of Ontario

the most advanced findings of men and women who will seek steadily and relentlessly for new methods, new medicines, new treatments, that will reduce dental disease and improve dental techniques."

A temporary well-equipped research laboratory has already been established through financial assistance from the University of Toronto as well as generous grants from private sources. An expert staff has been made possible through training which began six years ago, of teachers and research workers by graduate study—a foresighted plan arranged by Dr. Roy G. Ellis, Dean of the Faculty of Dentistry at Toronto. Under this plan six well-trained workers have returned to the Faculty.

At the end of April this year, \$139,000 of the \$300,000 required to finance this five year programme had been subscribed by members of the dental profession, chiefly Ontario graduates, whose aim is to share fifty percent of the cost of a great research institute which will benefit not only its own members but the public at large.

In the United States and Europe as well as in Canada, the current financial investment in dental research is completely inadequate, and is the essential reason why so many problems in urgent need of investigation are at a standstill. It would appear that vital though problems of dentistry may be, they do not yet hold the same appeal as medical ones for persons who have funds to allocate or bequeath to research. To quote figures of the year 1953: Ontario has 2400 practicing dentists with but 16 persons engaged in dental research—a ratio of 1 to 150—while it has 6000 physicians and surgeons with 500 persons doing medical research, a ratio of 1 to 12. The inference to be drawn from these statistics is obvious.

Those who have read with interest recent dental literature, if only in popular current periodicals, must realize that the profession is diligently and constantly striving to make people conscious of the high prevalence of dental disease, as well

as seeking their individual cooperation in its control. The profession during the last decade has been proclaiming through many sources that no longer is it content with a service which provides chiefly for extensive as well as expensive restorative work—that preventive dentistry must take precedence over restorative dentistry if a major health problem is to be diminished. To accomplish this end, continued and more expansive research particularly into the fields of causation and prevention of dental caries is a requisite—supplemented by an active Public Dental Health programme.

In 1901, William Hunter, a medical doctor, suggested that perhaps the inception of many general diseases might be found in Oral disease. This theory of "Focal Infection" aroused keen public interest and for a time the medical profession regarded it as the answer to otherwise baffling conditions. Often wholesale extraction of teeth was recommended in looking for a cure for many diseases. The results were frequently very disappointing, not only to the doctor concerned but to the patient. More recently, Dental and Medical Research have combined to place the theory in its proper light and as a result of their cooperation a more sane approach to General Health problems has developed.

Progress towards control of dental disease has been slow for reasons other than the fact that not till of late has dental caries been recognized as an important health problem. As previously intimated, it is only recently that there has been a group of scientific investigators in dentistry prepared to study the problem. Another reason for retarded progress is that concepts and techniques used successfully by investigators in the field of medicine in connection with diseases to which they have given their attention, have proved unsuccessful when applied to the problem of dental decay, since the nature of caries differs from the nature of other diseases studied. So the problem till recently has been tossed back and forth between two

schools of approach; on the one hand by a group lacking adequate scientific background and "drawing its explanation almost entirely from clinical observations," and on the other hand, by a group who, failing to understand the basic nature of the problem to be solved, have endeavored "to give its explanation from analogies to other disease conditions". More skilled investigators and more new knowledge of the factors concerned in caries have recently served to narrow the breach existing between these two schools. The only conclusion to date that can be drawn from their investigations is, "that local factors are the principal determinants in the causation of caries, but that systemic factors may modify its progress either favorably or unfavorably." A few illustrations may serve to clarify this conclusion. It has been scientifically demonstrated, "that microscopical hypoplasia influences susceptibility of the teeth to decay," indicating "that tooth structure is important in influencing susceptibility to caries." There is proof at child level "that fluorine increases resistance of teeth to decay" showing "that the chemical nature of the tooth surface is a determinant factor in causation." It has also been experimentally demonstrated that unless easily fermentable carbohydrates are included in the diets of animals, caries is not produced thus showing "the importance of the interaction on the tooth surface of bacteria and carbohydrates in relation to caries susceptibility". It has been shown that if such a caries-producing diet is fed to animals by a stomach-tube, where there is no tooth contact, that it does not produce decay.

The informed dentist readily admits that at the present time there is insufficient concrete evidence to show that some agencies commonly recommended for use in dental oral hygiene have any real value in prevention of tooth decay. Tooth-brushing and the use of much advertised dentifrices and anti-bacterial agents are among these. However, the fact that

there is no significant reduction in the present extent of dental caries does not justify conclusion that prophylactic measures are of no value, since any number of unknown factors may be contributory to the disease. There is experimental clinical evidence to show that teeth receiving good home care with periodic cleaning by dentist or hygienist show less decay activity; also that there is a marked reduction in new caries when teeth are brushed immediately after eating food. Theoretically, this may tie in with the evidence that periodic fermentation of carbohydrates on the teeth is the active cause of caries. The relative importance of each is yet to be established.

The recent publicity through a variety of lay channels given to a report by Dr. L. S. Fosdick of the International Association for Dental Research on the use of anti-enzyme dentifrices has been misleading to the general public. It is "essentially a laboratory report indicating favorable results", and informing us "that clinical studies are under way". Justifiable claims cannot be made about these nor any other agent for caries control without sufficiently wide clinical evidence being made available from "well-controlled studies of human population groups".

Nutritional studies of the past few years have encouraged dentistry to look to the effect of diets and vitamin therapy in relation to both caries of the teeth and the health of the surrounding tissues, but nutritional therapy has not yet brought the results hoped for. There is sufficient evidence to show that dental decay can be retarded by restricting temporarily the intake of certain carbohydrates and by reducing the frequency of eating — but it is not practical to attempt to reduce dental decay by eliminating or drastically cutting down on carbohydrate intake.

Dentistry is neither embarrassed nor discouraged in such lack of evidence mentioned. It recognizes that before a completely effective programme of caries pre-

vention can be devised, a fuller knowledge of all factors concerned in the natural history of oral disease is necessary. In the meantime the profession will continue more and more to stress "preventive dentistry", which incorporates "all the means and measures which can be taken to forestall oral diseases or disabilities". As far as the lay public is concerned, it can ill-afford to be either apathetic or adversely critical.

It would be very remiss not to mention the valuable contribution which stemmed from the need for dental treatment of men in the fighting forces of various countries during this century. In the Great War of 1914-1918 the need to reject an alarming number of volunteers on account of carious teeth or "an insufficient number to meet army regulations", initiated an educational programme in oral hygiene amongst men in all departments of the Services in many countries. At the outbreak of the First Great War civilian practitioners in dentistry offered their services for dental examination and treatment of the service personnel. At its close, it is worthy of note that the first Dental Corps, "officered and administered by dentists", had its origin in the Canadian Militia. World War II brought expanded and more efficient services to the Forces together with new developments in treatments offered. Today, the Royal Canadian Dental Corps, proud of its achievements and affiliations offers a career attractive to the dental graduate. The development of dental services in wartime not only was of great importance to the fighting Forces but had an unforeseen effect in all countries upon civilians, who in turn developed a consciousness of dental disease as a public health problem.

With the growth of such awareness, Public Dental Health programmes have been developed in Canada as they have been in other countries. But more encouragement and practical help is required, not only from those within the dental pro-

fession but from those outside its ranks, if effective and multiple services as planned by its inspired leaders may be carried out. At present such programmes provide for periodic examination of the teeth of school children, enlistment of volunteer services of Home and School organizations, of Service Clubs, of the radio, magazine and newspaper fields and other like mediums, for the purpose of promoting dental health. The Canadian Red Cross Society is worthy of mention in the service it has rendered in the setting up of Mobile Units, either by truck or rail coach, to minister to sparsely populated areas. Just recently the local newspapers carried an account of events of the annual Ontario meeting of that Society held in Windsor, in which the dental service was particularly mentioned; also that the Junior Red Cross had contributed \$15,000.00 to assist in the maintenance of a Cleft Palate Clinic at the Sick Children's Hospital in Toronto—there being some 1,000 cases in Ontario requiring attention.

Dental clinics have been organized in many of our hospitals in United States and Canada, where at the present time valuable service is being rendered, and where the ground-work is being laid for a much more effective service in the future. As with our own hospitals in Hamilton, so in many other municipalities of these two countries, this development has come slowly, and for the most part, through the volunteer efforts of a few courageous and farsighted men of the dental profession, who willingly and not without sacrifice, have given freely of their time and services in initiating and fostering this development—and who at times have been grateful for the sympathy, understanding and cooperation they may have received from any members of the medical staff of those institutions, as well as from outsiders. It is fitting here to quote a statement made by Dr. Howard Holbrook, a distinguished member of the Torch club, as recorded in Marjorie Freeman Campbell's recent book, "Holbrook

of the San",* with regard to auxiliary services rendered at the Hamilton Sanatorium.

"But in spite of set-backs," said Howard Holbrook, "we were gradually expanding the scope of our auxiliaries to San treatment, the constant problem being to find sources of money to provide for them. The difficulty in their pioneer period was to persuade the public, and sometimes the Board, that these services were necessary; once we achieved that goal, matters were easier. For instance, during the latter years of the depression, funds from the public sale of San seals helped us not only in carrying on therapy but also in meeting the cost of dental treatment for patients.

"The dental department was a service—today taken for granted—which in the beginning caused us many a headache, and which could never have been developed except for the voluntary support of Hamilton dentists, in particular the late Dr. Walter G. Thompson and Dr. G. W. Everett.

"As in vocational therapy, it was our experience with tuberculous soldiers for whom dental treatment was provided that convinced us of its value for civilian patients."

"To-day a modern sanatorium requires as an absolute necessity a trained dental staff and the use of X-ray equipment. In pioneer San-days children were sent into town in the democrat to be treated voluntarily by Hamilton dentists, while other dentists, notably Drs. Thompson and Everett, visited the San regularly

to look after patients confined to the institution. As if this service were not enough, when dental equipment for the Preventorium became a definite requirement, Dr. Thompson, by means known only to himself, obtained it for us free of charge."

Also of local interest is the contribution of the recently formed Ladies' Auxiliary to the Hamilton Dental Association. In their first year of organization, 1951-52, they presented a cheque for \$250.00 to the Sanatorium towards the purchase of dental equipment. In the past two years they have raised a further noteworthy total of \$600.00 towards equipping the dental clinic at the new Nora Frances Henderson Memorial hospital.

For those of us dentists who have actively participated, as well as for those who have been keenly interested in the development of dental services in our local general hospitals, Dr. Holbrook's tribute to dentistry in hospital service is more than gratifying. It offers new inspiration in this department to those of us who have experienced much discouragement at times similar to that referred to by Dr. Holbrook.

Dentistry has achieved much — particularly in the past half century — but there still remains a vast field to explore. Only through the sympathetic understanding and the active encouragement of men like yourselves can the dental profession of today and tomorrow carry out its plans for expansion of present facilities, urgently required if there is to be an effective reduction in the prevalence of dental disease and an ultimate raising of the health standards of mankind.

*Published by Ryerson Press

For better nutritional management of rampant caries patients, one should be concerned not only with the science of diet prescription but also with the motivating factors, emotional or systemic, that influence the cravings for sweets. If such problems exist and are not adequately treated, nutritional management through dietotherapy is doomed to failure.

By using a caries activity test as a visible semiquantitative measurement, acceptance is more likely of a diet which recommends an increase in protective foods and reduction of fermentable carbohydrates. The monthly periodic check that this procedure involves is an excellent means of practicing preventive dentistry on an individual basis, and may be the answer to the patient's demands for a more adequate caries control.

Abraham E. Nizel, D.M.D., M.S.D.
Oral Surgery, Oral Medicine and Oral Pathology, August '54.

A serial cephalometric study of the rest position of the mandible on edentulous individuals*

by JOSEPH ALBERT ROGER COULOMBE, B.A.,
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INTRODUCTION

In recent years, a number of papers have been published pertaining to the rest position of the mandible. These papers may be divided roughly into two groups; one, studies of the physiology of the rest position of the mandible and two, the clinical applications of these studies to dental practice. These studies have markedly changed many concepts that were widely accepted in dental circles.

REVIEW OF THE LITERATURE

In 1934, Niswonger defined the rest position of the mandible as: "That position of the mandible in which it is involuntarily suspended by the reciprocal coordination of the muscles of mastication and the depressor muscles, with the upper and lower teeth separated, or the natural position of the mandible. This position may be assumed voluntarily and is constantly assumed subconsciously. It makes no difference whether the patient is edentulous or the person is an infant or an adult or is aged."

Other investigators like Charles (1925), Mershon (1939), Thompson and Brodie (1942) and Thompson and Craddock (1949) have written on the physiology of the rest position of the mandible and on its clinical applications. Thompson (1943, 1949) published the results of investigations on the rest position of the mandible conducted on various groups of patients.

The first analysis was concerned with the study of the constancy of the proportion of nasal height to total face height in growing persons over a period of years. The second group consisted of children undergoing orthodontic treatment and

also dealt with the same observation. The third part of the study concerned the rest position of the mandible of edentulous individuals. These individuals were studied by means of oriented cephalometric roentgenograms. Using thirty edentulous adults, he measured total face height from nasion to gnathion. An average of four pictures were taken with a time interval between pictures varying from a few days to four years. Amongst other conclusions, Thompson asserts: "These findings are offered as proof that the rest position of the mandible is stable and unalterable and, therefore, affording the most accurate and reliable basis for analysis and treatment of a number of dental conditions. At the same time, it makes necessary acceptance of the fact that there are two positions of the mandible, i.e. the functional, in which the teeth are in occlusion, and the resting position, in which the teeth are not in occlusion. These two positions naturally give different vertical dimensions to the face, the occlusal vertical dimension and the rest vertical dimension."

From the results of an investigation conducted at the University of Illinois by the department of orthodontia and prosthetics Thompson (1943) again concluded: "The physiologic rest position of the mandible is stable. If the mandible is carried by artificial restorations to a position beyond that of physiologic rest, it still returns to this position at the expense of unnecessary resorption of the supporting bone."

Brodie (1941) writing on the growth of the human head drew this conclusion: "The morphologic pattern of the human head is established by the third month of postnatal life, or perhaps earlier, and that once attained it does not change." He drew a composite pattern of facial growth, and from this he was able to state: "Chief amongst these conclusions is the parallel-

*A thesis submitted in partial fulfilment of the requirements for the degree of Master of Science in Dentistry, University of Washington, 1952.

ism between the lower border of the mandible at 2½ years and that at eight years. At birth the jaws are wide apart, although the lips are closed. The tongue completely fills the mouth and protrudes over the alveolar ridges supporting the lips." His data disclosed that constancy of the rest position of the mandible was established after 2 or 2½ years.

Holic (1948) went so far as to term the rest position of the mandible a "fixed point." He stated: "In determining the centric position of the mandible the physiologic rest position constitutes the fixed point. This is the position from which all mandibular movements start. Its position is constant in the respective individual, whether or not teeth are present." "The rest position is the most comfortable position the mandible can assume. It is a non-functional position but it is the position from which all functional movements start."

In a cephalometric study of the movements of the mandible, Thompson (1941) relates: "The mandible is maintained in position by the muscles above and below it. The musculature, not the teeth, determines the position of the mandible. This rest position is established long before any teeth are present, and there is evidence that it exists after they have been lost."

PURPOSES OF THE STUDY

The primary purpose of the present study is to investigate by means of successive cephalometric roentgenograms whether or not, on edentulous individuals, the rest position of the mandible is a constant and invariable position. An attempt was made, also, to determine whether or not there is a significant difference between the rest positions obtained with and without instructions to the patients. An effort was made to determine the best possible means of arriving at the true rest position when using the Broadbent-Bolton cephalometer as a clinical help in recording such a position.

MATERIAL AND METHOD

The material for this investigation was gathered by the author and is on file in the Orthodontic Department of the University of Washington. Twenty-eight adult patients were used for this study of which there were twenty-one males and seven females, completely edentulous except for two of the males who still had six anterior mandibular teeth. One of the subjects had the remaining teeth extracted sometime during the taking of the series of radiographs. The age range for the individuals varied from 35 to 76 with a mean age of 58.

The patients were instructed not to wear their dentures for two hours prior to each of their appointments. A series of ten oriented cephalometric roentgenograms were taken on the Broadbent-Bolton cephalometer of each of the patients studied. These films were made on ten consecutive days except for the intervening week-end. In order to distract the patient's attention from the purpose of the experiment, each one was engaged in informal conversation the moment he walked into the x-ray room. He was adjusted to the cephalometer according to the method described by Broadbent and the roentgenogram was taken.

One half of the cassette was blocked out with a lead plate while making the first exposure which was termed the "no-command" film. At the same session, the other half of the cassette was used for the "command" head-film.

There are certain aids which have been proposed for enabling the patient to assume the rest position of the mandible. These aids, as suggested by Gillis (1941), must parallel the desired movements of the mandible but not imply definite masticatory movements. Among these, having the patient repeat the sounds "M.N.C., MISSISSIPPI, M.N.C.," have been used by Thompson for this purpose. This phonetic exercise was performed in the following manner: The operator first cautioned the patient against moving his jaw or against swallowing after the

enunciation of the last group of letters. Then he had him accomplish the exercise as follows: The operator said "M.N.C.," the patient repeated "M.N.C.," and so forth for Mississippi and again M.N.C.

Every effort was made to keep the patient unaware of the purpose of the experiment. As for those whose unsatisfied curiosity was giving rise to resentment, thus threatening the acquisition of an adequate number of individuals for the study, a rather vague and elusive answer was given assuring them that more information would be available for them at the completion of their series of headfilms.

The distance from the mid-line of the cephalometer to the cassette was recorded for each individual at the first sitting and charted on the rocket card. This distance was kept constant throughout the study for each of these patients.

A template of one of the films (the one judged as being the clearest) was traced for each patient showing all possible landmarks: Nasion, Sella-Turcica, Pterygo-maxillary Fissure, Anterior Nasal Spine, Posterior Nasal Spine, Pogonion, Menton, etc. This template was used as an indicator to situate Nasion, Menton and Pogonion for each of the subsequent films of the same patient. Figure 1 represents a basic tracing of structures and points used. They were located as follows: Nasion: The fronto-nasal suture or junction of frontal and nasal bones. Menton: The most inferior point on the cross section of the symphysis of the mandible.

Pogonion: The most anterior point on the cross section of the symphysis of the mandible.

Point Sella: The center of the profile image of the bony crypt occupied by the hypophysis cerebri.

The templates, made of standard semi-transparent tracing paper, were superimposed on each one of the films of the series for each individual patient along a line drawn from Sella-Turcica to Nasion with the point Sella registered.

By running an arbitrary tangential line

on point Menton of the template and a parallel tangent on point Menton of the film being measured, it was possible to estimate and record the distance separating those two lines and read a value which was termed "positive" or "negative" depending on whether or not the tangent on point Menton of the film pass-

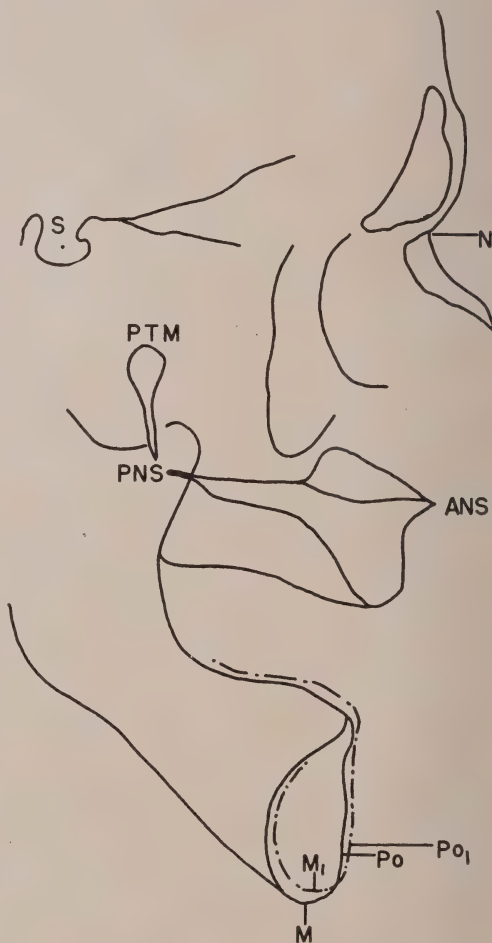


FIGURE 1

Typical tracing of an individual showing comparison between two headfilms. M to M₁ change shows vertical difference in position of mandible at point Menton. Po. to Po₁ change indicates anteroposterior difference at point Pogonion. The tracings are oriented by superimposing upon a line drawn from Sella to Nasion with the point Sella registered.

ed below or above the tangent on point Menton of the template. The value thus obtained corresponded to the variation in total face height. A double check on the total vertical height Nasion to Menton was made possible by measuring directly on the film at identical points for each of the following ones by using the template superimposed over it, locating Nasion exactly where it had been registered on the film that was used for tracing the template. This reading was termed total "rest vertical dimension." All linear measurements were made to the nearest 0.5mm.

FINDINGS

Tables I and II give the readings obtained for the "rest vertical dimension" for the "command" and "no-command" groups respectively. A series of statistical analyses were calculated in order to evaluate the significance of these readings. The results of these tests will be discussed on the following section of this study.

DISCUSSION

Means values were computed for each group, the grand mean for the "command" group being smaller than that of the "no-command" group by only .06mm. The student "t" test was run to compare the two means. As evidenced by such a small difference between the two values, the test proved them to be not statistically different. This allows one to conclude that in this study of 28 edentulous adult individuals, there is no marked difference in the total sum of all the readings whether the rest position is arrived at by the "command" or the "no-command" method. This behavior, however, seemed to differ in cases of dentulous individuals with excellent occlusion. Butori (thesis, University of Washington, 1952) conducting an identical experiment at the University of Washington, found the two methods to yield significantly different results. It is suggested that the tactile receptors of the periodontal membrane may play a significant role in regulating mastication

TABLE I—"Command Group"

Case	Number of consecutive days											σ	Error Coefficient of Mean Var.	
	1	2	3	4	5	6	7	8	9	10	11			
1	124*	123.5	123.5	124.5	125	125	126	124.5	125	124		.781	.247	.627
2	123	123	122.5	125.5	122.5		122.5	124	121.5	125.5		1.308	.413	1.06
3	126	124	124	125	127	125.5	124	125.5	125.5	125.5		.9774	.309	.78
4	128.5	128.5	128.5	128.5	129.5	129.5	128.5	127.5	127.5	127.5		.737	.233	.573
5	134.5	134.5	134.5	135	134.5	134.5	134.5	134.5	134.5	134.5		.158	.05	.117
6	118	116.5	117	116.5	116	117	116	116.5	117	117		.589	.186	.504
7	114	113.5	113	113.5	114	114	114	113	113	114		.459	.145	.404
8	117.5	119.5	119.5	118.5	119	119	119.5	119.5	119.5	120		.709	.224	.595
9	131	130.5	131	129.5	131.5	131	129	129	128.5	128.5		1.16	.367	.892
10	115.5	113.5	114.5	114.5	113.5	112.5	114.5	114.5	115	113.5		.883	.279	.773
11	115.5	114	115.5	115.5	115.5	115.5	116.5	115.5	115.5	115.5		.598	.189	.517
12	140	138	138.5	140	140	140	141.5	139	139	140		.994	.314	.712
14	140.5	139	138.5	139	137.5	138	138	139.5	140	136.5	139	1.2	.361	.865
15	133.5	132.5	133	133.5	134	134.5	134	134	131	131.5		1.15	.363	.863
16	136.5	136.5	138.5	137.5	138.5	138.5	138	138.5	138.5	137		.856	.270	.794
17	131.5	131	131.5	131.5	130	130	130	130.5	131.5	132		.761	.240	.581
18	138.5	139.5	140.5	140.5	139	139	140.5	140.5	138	137		1.22	.386	.875
19	137.5	137.5	138	137	138	136.5	137.5	137	138.5	138.5		.658	.208	.478
20	124	126	125	125	124.5	123	122.5	123	125	125		1.13	.357	.909
21	122	120.5	120.5	120.5	121	120.5	122	121	120.5	120.5		.614	.194	.507
22	117.5	116	115.5	117.5	117.5	117.5	117.5	116.5	116.5	115		.948	.300	.812
23	140	139.5	137	138	136.5	139.5	136.5	138	138	136.5	138	1.27	.382	.920
24	138.5	138	139	138	139.5	139	139	140	140	138.5		.724	.229	.521
25	124.5	124.5	126	126	124.5	124	123	123.5	124	125		.971	.307	.779
26	102.5	101.5	105	101.5	101.5	103	102.5	102.5	102.5	102.5	105	1.22	.367	1.187
27	133.5	134	132	133.5	132.5	132.5	132.5	131.5	132			.778	.234	.586
28	127	125	125	125	126	125.5	125	125	125	123.5		.88	.278	.702
29	110.5	111	109	109	108.5	108	109	107	108	106.5		1.39	.439	1.279

*All readings represent total "Rest Vertical Dimension" from Nasion to Menton measured in millimeters

TABLE II—"No Command Group"

Case	Number of consecutive days											σ	Error Coefficient of Mean Var.	
	1	2	3	4	5	6	7	8	9	10	11			
1	126*	123.5	123.5	124	126	124.5	126	126	125	125		1.04	.329	.832
2	123	126.5	120.5	122	121	117	121	122	121.5	125		2.57	.813	2.10
3	125	122.5	121.5	122.5	125.5	122.5	122.5	123.5	124	123.5		1.25	.395	1.01
4	130	128.5	129.5	132	130.5	131	130.5	128.5	128.5	128.5		1.25	.395	.963
5	135	134.5	133.5	134	134.5	134.5	134.5	135.5	133.5	134.5		.614	.194	.456
6	115	115.5	116	115	115	115.5	115	115	115.5	115.5		.349	.110	.302
7	113	112.5	112	112.5	114	112.5	112.5	112.5	113	112.5		.537	.169	.476
8	117.5	117.5	120	120	119.5	120.5	120	119.5	120	119.5		1.048	.331	.877
9	128	130.5	133	131	133	131.5	130	130	130.5	128.5		1.64	.518	1.25
10	115.5	112	113.5	113	112	110	111	111.5	113.5	112		1.54	.487	1.37
11	115.5	114.5	115.5	116	115.5	116.5	118.5	118	116.5	114.5		1.32	.417	1.13
12	140	140	138	138	140	138.5	141.5	138	139	140		1.18	.373	.847
14	140.5	140	138.5	139.5	139	137	139	141	139.5	138	139.5	1.24	.373	.890
15	135.5	134	134	135	134.5	134.5	134.5	134.5	132.5	132.5		.9718	.307	.724
16	136.5	137	136.5	137.5	137.5	137	137	137	137	135.5		.666	.210	.486
17	131.5	131.5	131.5	132	130	130	131	131	131	132.5		.788	.249	.60
18	140	139	141	139	140.5	140.5	140.5	140	138	136.5		1.39	.439	.996
19	137.5	138.5	138.5	138	137.5	138	139.5	139.5	140	139.5		.899	.284	.684
20	126	129	130	126.5	128.5	126.5	126.5	126	127.5	125.5		1.49	.471	1.17
21	120.5	120.5	120.5	120.5	121.5	120.5	120.5	120.5	120	119.5		1.497	.157	.412
22	116	116	116	116.5	117	118.5	118.5	117.5	119.5	115.5		1.34	.424	1.14
23	139.5	138	136.5	138	137.5	139	138	138	139.5	137	138	1.29	.388	.934
24	139	140	140	138	138.5	140	139.5	140	140.5	140		.813	.257	.582
25	126.5	127	128	128	126	124.5	123	124.5	125	127		1.66	.525	1.31
26	99.5	99		98.5	100	101	102	99.5	102.5	101.5	102.5	1.48	.445	1.47
27			133.5	136	132.5	133.5	133.5	133	132	134	136.5	1.42	.427	1.06
28	218	126.5	126	126	126.5	125	126	125.5	125	125		1.926	.293	.735
29	108.5	109	110	109	108.5	108	109	108.5	106.5	106.5		1.135	.359	1.04

*All readings represent total "Rest Vertical Dimension" from Nasion to Menton measured in millimeters

(O'Rourke and Miner, 1951). Rioch (1933) has stated: "The movements of mastication are started and coordinated by a cortical center which is reflexly guided by touch and pressure sensations from the tongue and teeth and by proprioceptive impulses from the masticating muscles."

In discussing specifically the nerve endings of the periodontal membrane, Van der Sprekel (1936) points out that the intradental and extradental nerve endings probably represent the receptor organs of reflex arcs which come into action the moment the opposite teeth touch.

In the decerebrate preparation, Sherrington (1917) observed that pressure stimulation of the teeth, the gums, or the anterior portion of the hard palate caused reflex opening of tonically closed jaws. This involved reflex inhibition of the jaw-closing muscles as well as stimulation of the jaw-opening muscles. This phenomenon could account for the different behavior between dentulous and edentulous individuals when the "command" and "no-command" methods of obtaining rest position of the mandible are used.

In the "command" method, as described above, speech is being involved. The tongue, then, comes into contact with the teeth and the lower teeth touch the upper. This action might cause a greater reflex opening of the jaws. The presence of teeth, in the case of dentulous individuals, could be interpreted as a possible factor accounting for the different "rest vertical dimension" obtained with the "command" and "no-command" methods. This factor is eliminated when dealing with totally edentulous individuals and, therefore, could serve to explain why, in such cases, both methods yield results which do not differ significantly.

The standard deviation, which is a scatter of the observations around their means proved also to be slightly less for the "command" group. For the "command" group this reading was a S.D. of .897 and for the "no-command" group, a S.D. of 1.155. A variance ratio test yielded an F. value of 1.67. Using 28 degrees of freedom, this F. value barely approaches a significant level. Thus, it cannot be concluded that there is a tendency for the

"command" readings to present less dispersion.

The standard error of the mean was also computed in order to evaluate by how much the means varied from one another. Again, the "command" group offered a smaller value, namely, .281, as against a value of .362 for the "no-command" group. This would indicate, again, that the "command" method would have a tendency to allow more constant successive readings when endeavouring to have a patient position his mandible in its true rest position. The difference between the two figures does not differ significantly enough to justify a recommendation of one method over the other.

The coefficient of variation aims at comparing the relative precision of the means. Here, again, a smaller value was obtained for the "command" group. This value was found to be .721 against a value of .921 for the "no-command" group. On the other hand, a test to evaluate whether these values differed appreciably between one another failed to bear any significance.

A test intended to determine whether the samples were drawn from uncorrelated material gave a "t" value not significantly different from zero, which permits the conclusion that the material for both groups is essentially the same.

One of the main purposes of the study was to investigate whether or not the rest position of the mandible (or rest vertical dimension) is constant and invariable on edentulous individuals. Table I and II give the entire series of daily readings for each patient of this study for the "command" and the "no-command" groups respectively. Only two figures were discarded, in case no. 2, 6th day of the "command" group and in case no. 26, 3rd day of the "no-command" group. We would have been justified in discarding a number of other readings which were evidently too far off to reveal the truth about the true rest position of the mandible for the patient. Therefore, readings were not dis-

carded that would tend to contradict the contention that the mandible is stable in rest position. It is interesting to note, in spite of that, that the grand mean of differences between readings for the entire "command" group is only 1.36mm. and for the "no-command" group, 1.74mm. A variation of 1.36mm. would allow for a play of the mandible of only .68mm. either way, upward or downward, from a fixed central point for the "command" group. That value would be .87mm. for the "no-command" group. This small variation would be accounted for by a number of factors such as variation in muscle tonus due to tension, nervousness, apprehension, time of day, etc.

Some patients presented remarkable constancy of this dimension. This constancy is striking in case 5, particularly, both for the "command" and the "no-command" series. Cases 6, 11, 19, and 28 of Table I and again cases 6, and 7 in Table II presented a constancy comparable to that of case 5.

In general, all patients presented comparable readings on five or more successive films of their series. It is the author's opinion that for all practical purposes, a reading of 115mm. obtained one day could be interpreted as identical to a reading of 114.5mm. or 115.5mm. on the following days. The mean value of these readings would still be 115mm. Such a contention is well-substantiated by the fact that the human mandible is held in a sling of muscles, the depressor and the elevator muscles of the jaw. Such arrangement could, without violating any law of muscle interaction, allow for a very slight variation, if only due to change in the tonus of one of the groups of muscles involved.

Case 5, who exhibited such remarkable constancy of the "rest vertical dimension" of the face, happened to be a man of 35 who worked as a mechanic in a garage. He worked till midnight every day. The roentgenograms were taken every morning at ten o'clock, i.e., exactly one hour after he had arisen in the morning. In

this case, it is logical to assume that there was not any muscle fatigue involved, which might have accounted for the constant readings obtained.

A survey of Thompson's figures was made in order to enable us to convert our linear values into percentages, therefore, affording means of comparison. The group of individuals undergoing orthodontic treatment was used for these computations. The percentage of variation for sixteen cases in regard to their first rest position, was .4%. The average change in percentage between occlusion vertical dimension and first "rest vertical dimension" for the sixteen subjects was found to be 1.77%. The average "free-way" space of these individuals was arbitrarily assumed to be 3.5mm. since there were a number of class II malocclusion cases in the series. It is accepted that class II malocclusion individuals present a larger inter-occlusal clearance than normal. These figures were used to work out a simple problem of ratios enabling us to convert our values into percentages. The grand mean of differences in readings in the "command" group, which is 1.3mm., gave a percentage value of .69%, in the "no-command" group, a percentage value of .9%. The "command" value of .6% variation is seen to coincide closely with Thompson's .4%. The "no-command" value departs more markedly from it. This slight divergence can be attributed to the fact that we rejected only two of the readings in the entire series.

It appears, therefore, that these data tend very strongly to substantiate Thompson's findings on the constancy of the rest position of the mandible or total "rest vertical dimension" of the face. It is concluded that out of a series of ten readings obtained for the total "rest vertical dimension" of the face of an individual, five or six duplicated values would reveal, invariably, the true physiological rest position of the mandible for that patient. Even values which would vary by only one-half of a millimeter either way from the most

frequently appearing value could be just as validly accepted and be used to work out the mean value of rest vertical dimension for that individual. It is not recommended that values should be used that depart from the most frequently occurring reading by more than 1 or 1.5mm.

SUMMARY AND CONCLUSIONS

1. The constancy of the rest position of the mandible, or better, total "rest vertical dimension," on 28 edentulous adult individuals has been investigated by means of a series of at least ten consecutive daily cephalometric roentgenograms.

2. The results obtained tend very strongly to substantiate Thompson's findings. It is, therefore, safe to assume that the rest position of the mandible can be recorded within physiological accuracy, thus tending to substantiate the contention that it is a constant and invariable position.

3. Two methods to obtain rest position on a patient have been evaluated, - a "command" method which consists in having the patient make use of recognized phonetic aids such as the enunciation of the sounds "M.N.C., MISSISSIPPI, M.N.C." and a "no-command" method which implicates nothing more than engaging the patient in informal conversation and registering the position of his mandible when the conversation ceases.

4. In this study, both methods yielded essentially identical results. The same methods, however, were found to express different findings in an identical investigation conducted by Butori on dentulous individuals with excellent occlusion.

5. The use of the Broadbent-Bolton cephalometer as a clinical help in diagnosing and planning major dental restoration cases where the accurate location of true rest position is paramount has been observed to offer great possibilities, especially where a reduction in interocclusal clearance is contemplated.

BIBLIOGRAPHY

- Anderson, R. M., "An appraisal of different methods used in determining the rest position of the mandible and the resulting free-way space by cephalometric roentgenograms," Thesis, University of Washington, 1952.

- Brodie, A. G., "On the growth of the human head from the third month to the eighth year of life," *American Journal of Anatomy*, Vol. 68, pages 209-262, 1941.
- Butori, E. F., "A serial cephalometric study of the rest position of the mandible on individuals with excellent occlusions," Thesis, University of Washington, 1952.
- Charles, S. W., "The normal movement of the mandible," *British Dental Journal*, Vol. 46, pages 281-285, 1925.
- Gillis, R. R., "Establishing vertical dimension in full dentures construction," *Journal of the American Dental Association*, Vol. 28, pages 430-436, 1941.
- Holic, Richard, "Centric registration in full denture construction," *Journal of the American Dental Association*, Vol. 36, pages 296-301, 1948.
- Mershon, J. V., "Bite opening dangers," *Journal of the American Dental Association*, pages 1972-1979, 1939.
- McCollum, B. B., "Oral diagnosis," *Journal of the American Dental Association*, Vol. 30, pages 1218-1233, 1943.
- Niswonger, M. E., "The rest position of the mandible and centric relation," *Journal of the American Dental Association*, Vol. 21, pages 1572-1583, 1934.
- O'Rourke, J. T. Miner, L. M. S., *Oral physiology*, The C. V. Mosby Company, St. Louis, 1951.
- Rioch, Janet Hck., "Neural mechanism of mastication," *American Journal of Physiology*, Vol. 108, pages 168-176, 1933.
- Sarnat, B. G., *The temporo-mandibular joint*. Charles C. Thomas, Springfield, Illinois, 1951.
- Sherrington, C. S., "Reflexes elicitable in the cat from pinine, vibrissae, and jaws," *Journal of Physiology*, Vol. 51, page 420, 1917.
- Thompson, J. R., "A cephalometric study of the movements of the mandible," *Journal of the American Dental Association*, Vol. 28, pages 750-760, 1941.
- Thompson, J. R., and Brodie, A. G., "Factors in the position of the mandible," *Journal of the American Dental Association*, Vol. 29, pages 925-941, 1942.
- Thompson, J. R. and Craddock, F. N., "Functional analysis of occlusion," *Journal of the American Dental Association*, Vol. 39, pages 404-406, 1949.
- Thompson, J. R., "The rest position of the mandible and its significance to dental science," *Journal of the American Dental Association*, Vol. 33, pages 151-180, 1946.
- Thompson, J. R., "The rest position of the mandible and its application to analysis and correction of malocclusion," *The Angle Orthodontist*, Vol. 19, pages 162-187, 1949.
- Thompson, J. R., "The constancy of the position of the mandible and its influence on prosthetic restorations," *Illinois Dental Journal*, Vol. 6, pages 242-247, 272, 1943.
- Van der Sprenkel, H. Herkelbach, "Microscopical investigation of the innervation of the tooth and its surroundings," *Journal of Anatomy*, Vol. 70, pages 233-241, 1936.
- Notes and laboratory manual for practical cephalometrics. Postgraduate Dental Education, University of Washington.

Rhinolith

Report of Case

by PAUL L. RONDEAU, D.D.S., Vancouver, B.C.

Mrs. D. J., aged 31, was referred by her family physician Oct. 2, 1953 complaining of a rather large painful swelling of the left side of her face.

HISTORY.

Interrogation revealed that routine dental operative procedures had been carried out for years: that no artificial appliances were being worn: that a large silicate had been placed in the upper left lateral incisor on Jan. 5, 1953 and that this tooth had been somewhat sensitive since that time.

Mrs. D. J. reports that she has received no medical treatment for the last five years: that she has noticed a slight malodorous mucopurulent nasal discharge and maxillary sinus pain during each cold for the last ten years: that otherwise her complaints had been confined to normal developmental problems.

On Sept. 19, 1953 her left lateral incisor

became extremely sensitive to heat and cold and about a week later, as the pain increased, her face began to swell. Her dentist explained that nothing could be done to help her until the swelling had subsided. On Oct. 1st., 1953 she consulted her physician and 400,000 I. U.'s of SR Procaine Penicillin were injected intramuscularly into the Deltoid region.

EXAMINATION.

A rather soft edematous swelling of the left face from the lower border of the mandible to the lower eyelid became exaggerated and firm at the maxillary cuspid region. No evidence of a cellulitis could be visualized on the face. The patient's temperature read 99.5.

Intra-oral examination revealed extensive edema in the cuspid region but no definite fluctuation could be demonstrated. The hard palate appeared to be normal, the left cuspid and lateral incisor were sensitive to percussion, heat and cold.

Intra-nasal examination failed to reveal any unusual swelling or inflammation.



FIGURES 1 and 2. X-rays taken to determine cause of swelling.

Some difficulty was experienced in breathing through the left nostril at this time.

Since this was thought to be a dental problem, routine periapical and occlusal radiographs were taken. From these radiographs we were able to visualize a large silicate restoration on the distal of the upper left lateral incisor, some thickening of the periodontal membrane and loss of the lamina dura at the apex of the same tooth. A large radio-opaque mass in what was thought to be the left nasal cavity could also be seen. These perceptions were confirmed by Dr. H. M. Worth, a radiologist who was consulted because of the unusual nature of this radio-opacity.

DIAGNOSIS.

- (1) Alveolar abscess of the upper left lateral incisor with exacerbations.
- (2) Rhinolith of the left nasal cavity.

TREATMENT.

On Oct. 2nd and 3rd 400,000 I.U.'s of SR Procaine Penicillin were administered intra-muscularly and by Oct. 5th the patient's swelling and elevated temperature had been reduced dramatically. She was then referred to a general practitioner, Dr. P. Boyle, for Endodontic treatment. The canal of the upper left lateral incisor was obliterated and the root resected. Several weeks later, on completion of her treatment, the patient was referred to a Rhinologist, Dr. G. Badger, for the removal of her Rhinolith.

PATHOLOGICAL REPORT.

A broken greyish colored calculus, weighing 106 mgms. which is irregularly shaped, has roughened surfaces and is approximately the size of a small plum stone. On section, the stone is moderately hard, has a soft black graphite-like nucleus and presents laminations. Chemically, the calculus consists mainly of phosphates with traces of carbonates.

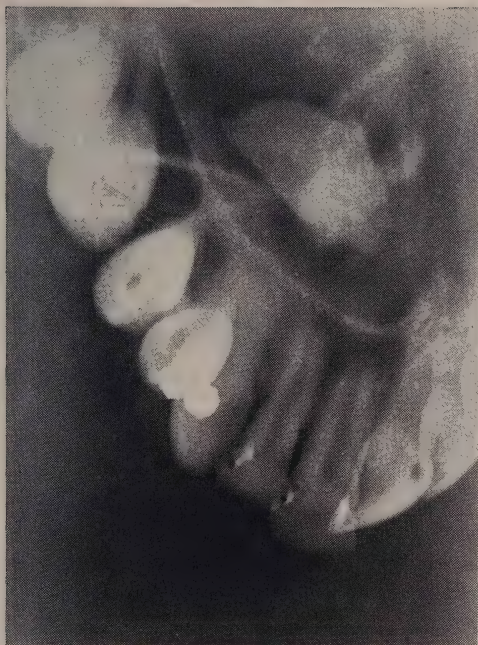


FIGURE 3

X-ray taken to identify radiopaque mass above teeth.



FIGURE 4

Photograph of specimen removed.

& Feldman (1936), Gilbert (1952), and many others have described this as the exogenous type of Rhinolith and not unlike most specimens contained phosphates and carbonates.

The interest in this report lies in the rarity of this condition in the first place, the absence of any symptoms or signs in the periods between colds, and its coincidental recognition in the routine investigation of a purely dental abnormality.

Any dentist who encounters a rhinolith is likely to find his diagnostic ability tested and the above experience only goes to prove that his knowledge must be wider than the immediate field of dentistry.

COMMENTS AND SUMMARY.

There seems to be little doubt that a foreign body which lodged in the nose without the knowledge or recollection of the patient supported the continuous deposition of calcareous material. Snyder

A tooth drill has been invented by R. J. Nelson, C. E. Pelander, and J. W. Kumpula at the National Bureau of Standards. It has a tiny turbine, driven by water, that spins at a rate of 61,000 rev/min. Its diamond-disk grinding point stops instantly when a finger is abruptly placed against its edge, if the dentist presses too hard while grinding a tooth, or if the tool should happen to catch or bind in a manner that would be hazardous. It does not climb or roll out of the cavity.

Water is pumped to the driving turbine through a flexible tube and, after passing through the turbine, returns to the pump in another tube that jackets the inflow tube. The dentist can stop the drill for a moment by stepping on a special tube filled with fluid; the fluid trips a pressure-sensitive switch which shunts the water around the turbine.

National Dental Examining Board of Canada

by H. N. BEACH, D.D.S.

The first Annual Meeting of the National Dental Examining Board of Canada since its inauguration was held July 5th and 6th, 1954 in the Chateau Laurier Hotel, Ottawa. Representatives were present from all Provincial licensing bodies as well as the Council on Dental Education of the Canadian Dental Association.

The President, Dr. H. J. Merkeley, presided and welcomed the guests, Dr. Don Gullett and Dr. George Cameron. These men were the architects of the By-Laws and Regulations of the National Dental

Examining Board. Their forethought had resulted in a set of regulations which anticipated many of the problems of the administration of an examining board. The regulations could not have been better prepared and resulted in an excellent guide to the conduct of the work of the Board.

Examination Results

All the Examiners of the Board met in committee and reviewed the results of the June examinations. All the failed papers were reviewed and the final results were: out of 80 candidates 62 passed, 8 had supplementals in one subject and 10 failed



NATIONAL DENTAL EXAMINING BOARD OF CANADA—ANNUAL MEETING
JULY 5 & 6, 1954

Seated left to right: Dr. A. G. Racey, Dr. J. A. Fortier, Dr. R. W. Ball, Dr. R. J. Godfrey, Dr. Wm. Miller, Vice-President, Dr. H. J. Merkeley, President, Dr. H. N. Beach, Registrar-Secretary.

Standing left to right: Dr. Roy Ellis, Dr. G. Cameron, Dr. Don Gullett, Secretary, Canadian Dental Association, Dr. W. F. Hancock, Dr. Heath McIntyre, Dr. J. F. Edgecombe, Dr. Hugh Eaton, Dr. H. R. MacLean.

outright.

The examiners attempted to set a high standard in the examinations which they set and in their marking.

The intention is that these examinations shall be of the highest standard in Canada and that the Certificate of the National Dental Examining Board will be a distinguished one.

The candidate with the highest marks was Dr. C. Ronald Hill of Moose Jaw, Saskatchewan, who graduated from the University of Alberta. His standing was recognized in a suitable manner by the Board.

Examination centres were set up at the Faculty of Dentistry, Dalhousie University, Halifax, N.S.; Faculty of Dentistry, McGill University, Montreal, Que.; Faculty of Dentistry, University of Toronto, Toronto, Ont.; The University of Manitoba, Winnipeg, Man.; The Faculty of Dentistry, University of Alberta, Edmonton, Alta., and The University of British Columbia, Vancouver, B.C.

Following is the number of candidates who tried in each centre: Halifax — 11, Montreal — 23, Toronto — 11, Winnipeg — 3, Edmonton — 28 and Vancouver — 4.

Graduates from 1948 on may be accepted as candidates

The Board considered the date from which applicants may be accepted as candidates.

As a result of information made available to the Board at this Meeting it was found that applicants from Canadian schools and some American schools, who graduated from the year 1948 on, may be accepted as candidates. Candidates are required to be graduates of schools approved by the Council on Dental Education of the Canadian Dental Association. A list of all approved schools is kept by the Registrar-Secretary of the Board.

Code of Ethics

It was decided to require all applicants to sign a pledge declaring that they have read and understand the Code of Ethics

of the Canadian Dental Association, this to be added to the existing pledge. Any breach of the said code as well as any conviction for violating the dental law of any province would be recognized as sufficient grounds for removal of his name from the register of the Board.

The officers and chief examiners were reappointed for another year and the officers are as follows: President, Dr. H. J. Merkeley, Winnipeg, Man.; Vice-President, Dr. Wm. Miller, Vancouver, B.C.; Executive, Dr. A. G. Racey, Montreal, Que., Dr. R. J. Godfrey, Toronto, Ont., Dr. J. F. Edgecombe, St. John, N.B.; Registrar-Secretary, Dr. H. N. Beach, Ottawa, Ont.

A special series of examinations in all subjects set by the Board will be held from November 22nd to 25th inclusive this Fall, mostly for the convenience of those who had supplementals. Applications will be accepted for this series of examinations to October 15th.

The next regular series of examinations will take place in the Spring of 1955, applications for the same will be received until April 15, 1955.

All correspondence and applications should be addressed to the Registrar-Secretary, Dr. Harold N. Beach, 150 Metcalfe Street, Ottawa, Ont.

NATIONAL DENTAL EXAMINING BOARD OF CANADA

EXAMINATION SCHEDULE—NOVEMBER 1954

Duration of each written examination session—2½ hours

MONDAY, NOVEMBER 22nd		
	West of Brandon	East of Brandon
Operative Dentistry	9.00 a.m.	10.00 a.m.
Oral Surgery, Anaesthesia & Pathology	1.30 p.m.	2.30 p.m.
TUESDAY, NOVEMBER 23rd		
Prosthodontics	9.00 a.m.	10.00 a.m.
Ethics, Jurisprudence & Practice Management	1.30 p.m.	2.30 p.m.
WEDNESDAY, NOVEMBER 24th		
Preventive Dentistry	9.00 a.m.	10.00 a.m.
Oral Medicine	1.30 p.m.	2.30 p.m.
THURSDAY, NOVEMBER 25th		
Two half-hour oral examinations (interval at discretion of Oral Examiner)	9.00 a.m.	10.00 a.m.

Oral examination will be in the application of basic sciences to clinical dentistry.

ABSTRACTS

Dangers of scattered radiation in dental practice.

by JOHN F. MEKLAS, D.D.S.

Journal of the American Dental Association, August 1954.

Scattered radiation has the same effect on the body as any other ionizing radiation. This radiation is cumulative in the body and can be responsible for mutations, blood changes and tumor growth. It is impossible to measure the amount of dissipation of cumulative ionizing radiation, and presumably the figures quoted will vary with individuals and their environment. The scattered radiation received by dentists in the dental office is whole body radiation. Scattered radiation is sufficiently penetrating to reach bone marrow. The amount of scattered radiation will depend to a large degree on the position the operator takes while taking roentgenograms and the dis-

tance from the patient. The allowable operating dose should never exceed 300 mr. per week, and evidence at the present time indicates that this figure may soon be lowered to 200 mr. per week.

The dentist should stand directly behind the roentgen-ray head when taking roentgenograms. He should stand at least 5 feet from the patient. The timer switch cord should be lengthened if it is short. If an assistant is used, she too should stand behind the roentgen-ray head. An $\frac{1}{8}$ -inch lead-lined portable partition with leaded glass window can be used to shield the operator. Assistants should be informed regarding the hazards of radiation. Film should never be held in the patient's mouth by the operator. Fast film should be used whenever possible to reduce exposure time.

Dentists should take as much vacation as possible since some of the accumulated radiation is dissipated when the individual is out of his office.

Effects of air abrasive in prophylaxis.

by H. D. WHITE, D.D.S., and F. A. PEYTON, D.Sc.

Journal of the American Dental Association, August 1954.

Correct angulation, distance and time of exposure will determine the severity of etching on the enamel surface. It is difficult to maintain these conditions, especially in the posterior region of the maxilla.

Repeated applications of this type of prophylactic procedure will in time re-

duce the enamel surface, especially at the cervical margins, to a point that little or no protection will be afforded the dentine.

Cracks, fissures and margins of restorations will be eroded and opened, and this will allow early entrance of bacteria as well as the accumulation of calculus or food debris.

When the Airdent is used, surface loss will in most instances be less than 5 microns, provided all the conditions stated previously are followed with precision. In addition, there will be surface loss in

the polishing operation to remove the etched effect of the surface. This loss will be greater than the amount lost in the initial cleaning. Polishing of this surface will necessitate the use of a rubber cup with a suitable polishing paste.

Prophylaxis when the rubber cup is used will remove tooth structure. The amount of loss will depend on the type of abrasive used, the pressure applied to the handpiece, the length of time of application and the number of revolutions per minute of the handpiece. The surface at the completion of the operation is smooth and highly polished.

The particles of dolomite vary greatly in size; the larger particles cause the deeper etch marks as can be seen in a micrograph. Some standardization of particle size would reduce the severity of etching and the discomfort to the patient because of the stinging.

Angulation of 45 degrees, which is recommended by the manufacturer of the Airdent unit, will not clean the cervical

margins of the teeth. This was demonstrated by the use of a disclosing solution after the application of the air abrasive. The cervical margin is the most important area for hard and soft deposits and should be cleaned thoroughly. The question of subgingival calculus must be considered; the air abrasive will not remove the calculus below the normal epithelial attachment of 1 to 2 mm. Deep pockets which usually contain deposits of calculus would not be cleansed. The deeper calculus is most important as a causative factor in periodontal disease.

The air abrasive type of prophylaxis seems contraindicated in most routine cases when the deposit and staining are not severe. The recognized method of prophylaxis with scalers and rubber cup will remove these small deposits quickly and with a minimum of enamel loss. The only complaint patients have against a prophylaxis is the pain caused by the scalers. It is felt that this new method of prophylaxis will not supersede the older method.

Basic Anatomic Factors of Jaw Position.

by RALPH H. BOOS, D.D.S.

*The Fortnightly Review of the Chicago Dental Society,
August 15, 1954*

The following are predominating basic factors in the registration of jaw position: (1) occlusion, (2) the temporomandibular joint, (3) the bone and soft tissue, and (4) the musculature.

By studying the various registrations in relation to their basic anatomic factors, we might arrive at an opinion as to which factor predominates. A principal factor would be most helpful in the selection or development of a jaw relation registration technique.

Tooth occlusion is probably the most commonly used method for jaw relation registration. A great percentage of oc-

clusions might be considered malocclusions which may cause traumatogenic condyle position. Mouth conditions may be aided and relieved by some corrections from presented occlusion. However, it is doubtful that a tooth occlusion provides a scientific position of jaw relation from a physiologic standpoint.

Bone and soft tissue may be affected by hereditary and acquired conditions. Bone is helpful in considering the relation of the tooth to the foundation, but there may be a question of a normal relation in the consideration of jaw position because of the fallacy of applying comparative average measurements to an individual. Changes of bone due to traumatic conditions are misleading.

The temporomandibular joint, as used in the hinge axis and Gothic arch tracing techniques, may be affected by a malocclusion. If the malocclusion includes a traumatized temporomandibular joint, it

is possible that this traumatic condition would be recorded as the jaw position.

The use of the musculature or physiologic rest relations might be complicated by tensions or other conditions. A normal relation is usually possible by conditioning the muscles for a recording of rest position. There may be habit patterns which need to be reduced to permit a normal muscle function. The muscles and their function appear to be the predominating factor over the other anatomic structures. Muscles may be returned to a normal function within a reasonable length of time.

By conditioning the patient and recording the unstrained physiologic rest position, there is a good possibility of record-

ing a normal jaw relation. By recognizing and including a consideration of the free-way space, we may diagnose vertical dimension. By closure from rest position, we may record the centric relation, and because the muscles are of equal length, we will have recorded a neutral center without the existence of tipping forces on the mandible.

We may control the position of the condyle and determine the positions of occlusal function by diagnosing the occlusion from the physiologic rest position. The occlusion is placed in harmony with the muscles, and we have established a normal physiologic relation between the occlusion, the muscles, and the temporomandibular joint.

The role of Hydrocortisone in the Control of Apical Periodontitis.

by BERTRAM L. WOLFSOHN, D.D.S.

The Journal of the California State Dental Association, July-August, 1954.

Hydrocortisone seems to present the opportunity to facilitate and control, and under certain conditions eliminate, the possibility of secondary periodontal inflammatory reactions during treatment of the pulp canal.

A preliminary investigation has been made in seventy-nine endodontic cases in an attempt to evaluate the effectiveness of hydrocortisone in the control of apical periodontitis.

The technique employed in the control of periodontitis, when used in the electrosterilization procedure, during treatment was as follows: Electrolysis having been completed, the excess aqueous residue of the electrolyte was blotted out of the canal with sterile paper points; a syringe fitted with a 27-gauge needle and containing hydrocortisone, the aqueous saline suspension, was introduced into the canal

of the tooth under treatment and approximately 0.5 c.c., or 8 minims, of the suspension was flushed into the root canal. This suspension was allowed to remain in the canal and chamber, and subsequently was pumped through the canal lightly until the pressure of the drug was felt in the periapical area. A sterile paper point was placed in the canal in the presence of the excess hydrocortisone and covered with a sterile cotton pellet, the excess thus obtained was blotted with another sterile cotton pellet, an inner seal of temporary stopping was placed in the pulp chamber, and finally the secondary seal of cement was applied. Teeth so treated were permitted to rest with the hormone in the pulp chamber and canal.

0.5 c.c. of hydrocortisone injected into the pulp chambers and pulp canals of teeth treated by the electrosterilization procedure resulted in the reduction and elimination of severe secondary inflammatory reactions in the periodontal membrane following treatment.

Similar use at the conclusion of the immediate pulpectomy procedure resulted in the diminution and absence of second-

ary trauma of the periodontal membrane.

This drug, when used in the presence of infected pulp and periapical tissue, will produce exacerbation of the disease process.

Hydrocortisone, when used at the cellular level, assists in the retardation of in-

flammatory processes secondary to certain endodontic procedures.

Continued investigation into the use of saline suspension of hydrocortisone is being designed to evaluate the scope of its effectiveness in the clinical practice of endodontics.

A Rational Approach to the Treatment of the Mixed Dentition.

by EUGENE H. FARBER, B.S., D.D.S.

American Journal of Orthodontics, August 1954

There is anthropologic proof that malocclusion is a part of deep-rooted evolutionary elements tending toward a reduction of facial structure.

There are extensive hereditary factors working on the formation of the dento-facial complex.

The interrelationship of hereditary and environmental factors creates the individual, but the hereditary factors take precedence over the environmental factors.

Through the experimental evidence compiled on rats and through observations of primitive peoples, we can be sure that function plays a large part in the growth and development of the jaws.

Early treatment of the mixed denti-

tion, which tends to create the conditions for normal function, is useful in procuring a beneficial effect upon the growth and development of the patient's dento-facial complex.

In those cases which, through measurements, show a definite deficiency of basal bone beyond the scope of present-day techniques to remedy, early serial extraction of primary canines and first primary molars followed by extraction of the permanent first premolars upon their eruption can abort the production of a severe malocclusion.

Even when treatment must be reinstated in the permanent dentition, the early re-creation of normal function has a beneficial effect in terms of better balance of the facial structures.

An awareness of the limitations imposed upon treatment by heredity, environment, nurture, and present-day techniques will result in more effective and efficient treatment.

An Investigation into the Suitability of the Auto-Polymerising Resins for Direct Inlay Patterns.

by JOHN W. McLEAN, I.D.S., Eng., and G. A. MORRANT, B.D.S., D.D.S., I.D.S.

British Dental Journal, Aug. 3, 1954

An attempt has been made to assess the suitability of auto-polymerising acrylic

resins, as used in restorative dentistry, for use as direct inlay patterns by reference to the requirements demanded of a standard inlay wax.

The acrylic is proved to be comparable and may be even superior to wax in regard to plasticity, manipulation and cavity adaptation.

The difficulty of colour differentiation does not present a serious problem and could be quite easily overcome.

However, the pigmented resins as routinely used have been found unsuitable for acrylic patterns owing to the residue left after burn-out causing a roughness of the resulting casting. While this was overcome by using a special clear resin of amine-peroxide activation, the tendency to a generalized surface roughness was not entirely eliminated.

In no case was an accurately fitting casting obtained from either pigmented or clear acrylic resin and the main causes of this result are thought to be the distortion of the mould due to the expansion of the acrylic on heating, together with the destruction of the mould surface. It

is possible also that the acrylic inlay pattern restrains the setting expansion of the investment. An additional factor which may be considered is that auto-polymerising resin does not lend itself to any technique using thermal expansion of the pattern itself as is possible with inlay wax.

In the present state of knowledge and using the techniques so far advocated, the self-polymerising acrylic resins are quite unsuitable for the production of accurately fitting inlays. This conclusion would still hold good even if special clear residue-free acrylic, suitably coloured, were to be produced.

The Management of Rampant Dental Caries.

by G. N. DAVIES, D.D.S. (N.Z.)

The Dental Journal of Australia, April 1954.

Rampant dental caries is an acute manifestation of a disease which can exist in a number of different forms. The management of the type of rampant caries characterized by a very high rate of development of new lesions is discussed in this paper.

In a small sample of New Zealanders rampant caries was found in approximately 16 per cent of pre-school children, 13 per cent of school children and 15 per cent of high school and university students.

Evidence has been presented to show that regular operative treatment alone will reduce the extraction rate for patients with a low or moderate susceptibility to dental caries but will not achieve

results of practical significance in the treatment of rampant caries.

In advising a treatment plan consideration must first be given to that form of therapy which is in the best general interests of the patient and to the willingness of the patient to co-operate in following any advice and instruction given.

If a full patient co-operation is unobtainable a radical treatment plan should be followed. If, on the other hand, the patient or parent is prepared to take an active part in treating himself a conservative and preventive treatment plan should be followed. In this plan both dentist and patient attempt to treat both the cause and effects of the disease.

Because of our limited knowledge of its histopathology the treatment of the cause of rampant caries is largely empirical and restricted to diet therapy (replacement therapy for pre-school and young school children and a low carbohydrate diet for adolescents and adults), oral hygiene and topical applications of sodium fluoride.

RESEARCH

FOREFRONT OF CANADIAN DENTISTRY

A study of the dentofacial anatomy in normal and abnormal individuals employing lateral cephalometric radiography.

by D. H. JENKINS, Department of Orthodontics,
Faculty of Dentistry, University of Toronto.

METHOD:

This study employed 4 samples, one normal adult sample of 26, one normal child sample of 32, one Class II Division 1 child sample of 32 and one Class III child sample of 10 individuals.

The skull was viewed as 3 functional areas, the cranium or brain case, the jaws and teeth, and the orbital nasopharyngeal area.

Two functional planes representing the base of the skull (Bolton plane) and the occlusal plane were drawn.

Morphologic variation in the skull deriving from 2 sources was then studied.

(A) Variation between cranial and masticatory functional systems, measured by the cranial base occlusal angle.

(B) Variation within functional systems. This was measured in the masticatory system with occlusal plane as the reference plane.

Since the occlusal plane cannot reliably be established in many types of malocclusion, a theoretical occlusal plane or line of occlusion was derived from bony measurements based on the orientation of the jaws to each other.

To study ventro dorsal jaw relations, the position of "B" point and gnathion was measured in relation to a plane drawn through "A" point at right angles to occlusal plane.

FINDINGS:

1. Normal and abnormal individuals in the four samples exhibit similar cranio-facial morphology in the characteristics studied, except for variation in chin position and certain dental relations. However, abnormal samples tend to display greater ranges of values.

2. The normal child and adult samples are very similar except for a more forward position of the bony chin to the degree of 1.5 mm. in adults.

3. "B" point and gnathion normally exhibit similar values for their position with respect to "A" plane. Normal individuals exhibit a certain range of values for gnathion (6 mm.) and "B" point (4.5 mm.) about the mean position (child 1.5 mm. and adult 3.0 mm.) with respect to "A" plane.

4. The chin is situated posteriorly to normal in Class II Division 1 cases (6 mm.) and anteriorly in Class III Cases (8 mm.). However 50% of the Class II Division I sample exhibit a chin position within the normal range. In these cases the mandibular deformity is of the nature of a dento alveolar retraction.

5. The first permanent molars are similarly placed equidistant from A and

B point in each jaw in normal occlusions, if measured along occlusal plane, with a range of 3 mm. The Class II Division I maxillary molar is 2mm. post normal in the maxilla. Class III cases exhibit a mandibular molar position, which, though abnormally anterior in relation to the maxilla, is actually more posterior to "B" point than normal. An explanation of these molar positions is suggested.

6. Downs values for incisor inclination are unacceptable for the Toronto populace.

7. Previous findings were confirmed by super-imposition of tracings to indicate that variation within the cranial and masticatory functional systems was minor compared with the variation between these systems as measured by the cranial base occlusal angle (mean 35, Range 25-45). A small cranial base occlusal angle tends to be found with a straight profile square jawed individual, a large angle

with the convex type profile. Since the major bony variation in the masticatory system lies in mandibular ventro dorsal translation along occlusal plane, variation in the cranial base occlusal angle may have important connotations in defining:

- a. The direction of masticatory muscle pull on the mandible.
- b. The individual growth pattern of the child.
- c. The esthetic prognosis inherent in a malocclusion case.

8. The models of the adult normal occlusions were traced by a surveying machine. The normal maxillary and mandibular dental arches exhibit high conformity in shape and dimensions.

The maxillary arch is on the average 2 mm. wider than the mandibular arch.

The maxillary arch width in the first bicuspid region is related to the canine fossa width.

A lateral cephalometric study of the skeletal pattern in cleft palate patients from 6 to 13 years of age

by MALCOLM YASNY, Department of Orthodontics, Faculty of Dentistry, University of Toronto.

This study deals with the developmental pattern in cleft palate patients from the viewpoint of (A) what influence these clefts may have on the development of the jaws and dentition, (B) whether the influence of the unilateral clefts differs from that of the bilateral or of the posterior clefts.

Measurements were done on lateral cephalostatic roentgenogram tracings of cleft palate patients. The sample included 22 patients with clefts on the left side (mean age 9.0, range 6-13); 19 patients with bilateral clefts (mean age 8.2, range 6-13); and 9 patients with clefts on the

right side (mean age 7.1, range 6-11). The sample was not divided as to sex. Various measurements were made, including many of the same areas as investigated by Gilley (Northwestern Bull., 1947) and Grater (A.J.O., 1949).

Only a few of the measurements were significantly different between the three different types of clefts.

1. The inclination of the upper centrals to Frankfort plane was much less (i.e., they were more lingually tipped) in the bilateral clefts than in the unilateral series.

2. The PTM-ANS (anterior nasal spine) measurements in the bilateral series was greater than in either unilateral (mean of 55.7 mm. to 51.1 mm. in left and 50.6 mm. in right unilaterals).

This indicates that during surgery the premaxilla, lacking bony attachment, is more or less rotated about a horizontal

plane. The centrals are then carried with it so that their incisal edges point more lingually and the ANS comes to lie more anteriorly.

3. The angle Sella-Nasion-ANS measured 89.5 in bilaterals against a mean of 81.8 in unilaterals.

4. Nasal height percentage in bilaterals measured 43.0% against 41.6% in unilaterals.

5. Maxillary height percentage registered 41.5% in bilaterals against 43.0% in unilaterals.

6. The maxillary first molar was found to be more distal in position than in normals, (mean 12.2 bilaterals and 13.0 mm. in unilaterals).

Since the premaxilla in unoperated bilateral clefts lacks bony attachment then the downward and forward growth of the nasal septum should be greater resulting in a more anterior and inferior position of ANS. Points 2 and 3 support the fact that ANS lies more anteriorly but points 4 and 5 indicate there is no significant change in its position vertically.

A study of the relation between the incidence of sucking habits, intelligence quotient and manual dexterity in children

by H. W. SHANKS, Department of Orthodontics, Faculty of Dentistry, University of Toronto.

A group of forty-three white children between the ages of five and one-half and eight and one-half years were studied to determine the relation between the incidence of sucking habits, I.Q., and manual dexterity. This group comprised (A) 25 children who previously indulged or presently indulge in any form of sucking habit, excluding lips or cheeks, and (B) 18 children with no history of a sucking habit who served as the controls.

Information as to feeding, the habit type, time of onset and duration, etc., was obtained by questionnaires. Intelligence Quotient (I.Q.) scores were obtained by the method of the Stanford Revision of the Binet Simon Intelligence Tests. These scores were gathered in routine study by the staff of the Institute of Child Study, University of Toronto. A measure of manual dexterity was devised using

three component tests of the Oseretsky Tests of Motor Proficiency.

The findings were as follows:

- (1) Thumb sucking was the predominant sucking habit with 27.9 per cent of the sample indulging in this type.
- (2) There was a statistically significant difference at the one per cent probability level between the average I.Q.'s of the habit group and the control or non-habit group. The children with a history of sucking habits had a lower average I.Q. than those with no history of sucking habits.
- (3) The Manual Dexterity Index tended to be lower in the habit group when compared with that of the control group.

After conducting the Oseretsky Tests, the author concluded that further work is warranted to classify their description and to make them more specific and objective.

Also there is evidence among the data compiled for this study, that further research involving larger samples of some of the sub-classifications (e.g., female habit group, frequency of indulgence) would be worthwhile if only to obtain statistically more conclusive results for what are reported here as indicated tendencies.

EDITORIAL

Will Progress Be Curtailed?

The Board of Governors meeting is over. The deliberations of three and one half days again have shown the multiplicity of endeavours engaged in by the Canadian Dental Association. It would be quite impossible, in the space of this editorial, to narrate in detail the developments in all phases of the work of the C.D.A. At least twenty-one working committees gave account of the stewardship placed upon them by association members. The cumulative hours, consumed by committee efforts during the year and represented by the reports of these committees, would be staggering to compute. The salient and most interesting point is that these almost countless hours are given freely and willingly by the individuals concerned. Canadian dentistry should consider itself most fortunate that dedicated practitioners are willing to sacrifice time, leisure, and money to contribute, on the broadest basis, to the progress of the profession.

Canada, through its very geography, presents problems of an unusual nature to an organization such as the C.D.A. Fifty-five hundred members are dispersed through a country which extends for some three thousand miles from the Atlantic shores of Newfoundland on the east to the Pacific coast of Vancouver Island on the west. Each province, too, is somewhat dissimilar to its neighbour. A dental act exists in all provinces but each act presents problems in some locations which are replaced by other difficulties in other areas. The Association must take these variations into account when evolving its policies and programmes. This is not too easily accomplished.

The reports of the various committees revealed an urgent need which must be met if the Association is to continue developing and, at least, keep abreast with the growth of Canada itself. The members of each committee, through their chairmen, indicated, in a most positive fashion, that their work was being drastically curtailed because of a lack of adequate funds. It was most apparent that the possible projects of the Research Committee alone, could more than consume the entire budget. Important committees such as Health Insurance Studies, Public Relations, Dental Education, Publications, and others, could present similar claims. It is almost a tragedy that the efforts of the committees should be so hampered because of a paucity of funds. This is a matter of grave concern and will have to be faced by all members of the profession for their own enlightened self-interest.

The 1954 Transactions of the Canadian Dental Association will be distributed at a later date. These reports and the comments upon them should be required reading for all Canadian dentists. It is only through an understanding of the many facets of Association activity that one can become aware of the vital need for its continuing development.

Two major resolutions were presented and approved at this year's Board of Governors meeting in the beautiful ocean-side resort at St. Andrews-by-the-Sea. The first was a reaffirmation of the Association's position in respect to the fluoridation of communal water supplies. The resolution reads in part:

"Whereas the Canadian Dental Association continually studies and evaluates all methods of preventing dental disease, and

Whereas these studies continue to demonstrate that fluoridation of communal water supplies is the most effective public health measure yet known for the prevention of dental decay, and

Whereas all pertinent studies continue to confirm the safety and economy of this measure, therefore be it

Resolved that the Canadian Dental Association strongly reaffirms its recommendation to the people of Canada that, without delay, communities having a communal water supply adopt a procedure for water fluoridation best suited to their local needs and for this purpose seek competent dental, medical and engineering advice."

The second resolution pertains to the subject of the need for an expansion of facilities for the training of dentists and dental hygienists. The profession has been the recipient, at times, of completely unfounded criticism that it was not assuming its responsibility in developing the dental manpower needed to meet both present and future requirements for dental health care. The Association, therefore, reiterated its stand in a most positive fashion on this subject:

"Whereas an acute shortage of dental personnel exists in Canada, and,

Whereas the teaching facilities in Canada have not been expanded for many years and are inadequate to graduate sufficient personnel to meet the present and increasing need of the public for dental services, and,

Whereas, we believe that there is an urgent and immediate need for more dental personnel in established government services, and,

Whereas no increase in the number of graduates could be anticipated from enlarged teaching facilities for a period of five years, and,

Whereas the responsibility for the provision of increased facilities rests upon governmental and university authorities,

Be it resolved that this Association use all available means to further the securing of expansion of teaching facilities for the training of dentists and dental hygienists in order to meet this growing need."

The Board of Governors meets next in Toronto in May of 1955. Any progress which will be reported at that time will come only after diligent attention to the responsibilities accepted by each officer, each governor, and each committee member. The membership-at-large need have no doubts about the sincerity with which their confrères undertake their duties. Their dedication has been proven in the past and will be apparent in the future.

The Library

Additions:

- | | |
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| BELLAK, L.: Psychology of physical illness. 1952. 243p. | HADFIELD, G.: Recent advances in pathology. 1953. 374p. illus. |
| BERGMAN, G.: The caries inhibiting action of sodium fluoride. 1953. 112p. illus. | HULDT, S.: Factors influencing the efficiency of dental local anaesthetics in man. 1953. 79p. illus. |
| BJORLIN, G.: The influence of local anaesthetics on living tissue in white rat. 1954. 112p. illus. | YATES, F.: Sampling methods for censures and surveys. 2nd ed. 1953. 401p. |

Committees and Councils

Ethics

The term "ethics" is derived from the Greek word "ethos" meaning customs, habitual conduct, usages, and later, character.

It is improbable that any phase of our professional interest is of greater importance to the life and welfare of the profession than the "habitual conduct" and "character" of its members. Much of the effectiveness of programmes to develop technical knowledge, research, public relations, or any other phase of our activities would be lost without a well developed sense of professional responsibility throughout the membership.

At best, your Committee is no more than an advisory group whose responsibilities as defined are: "to study all matters relating to the ethical standing of the profession; to recommend statements of ethical standards; to promote ethical principles . . . and to work with the corporate members for the establishment of ethical standards . . . acceptable to the profession."

Except in a very general way, ethical behavior cannot be legislated. The ethics of the profession are judged much more by performance than by the most carefully worded statement of intent. All too often the ethical standards of the profession are more firmly established in the public mind by the action of a single renegade, than by the good works of the many!

During the past year, your Committee has been asked to express an opinion on the conditions under which a member of the profession could ethically prepare articles on dental health for the newspapers, and at the same time receive remuneration for the necessary time and preparatory work.

In one sense a parallel may be drawn with the situation where a member of the profession is asked to prepare papers

for the dissemination of his knowledge amongst his confrères. If a man is asked to prepare the occasional paper for delivery or publication, he has a professional responsibility to do so without any financial reward. On the other hand, if he is asked to do a series of sufficient length and frequency, as in the case of some part time University lecturers or journal editors, and the amount of work involved is such as to seriously interfere with his means of livelihood, then he reasonably might expect some financial return.

In answer to the query, the following statement was submitted:

(a) "In harmony with the declared responsibility of the profession as presented in 'A Guide to Professional Conduct' (Sec. VIII para. (B)), the Committee on Ethics would recommend that the Association endorse the policy submitting articles on dental health to various newspapers and magazines, provided such articles have the prior approval or are submitted on behalf of a recognized dental organization (body).

(b) "It should be understood that while such articles may be prepared by a member of the profession, who for so doing may reasonably expect to receive a modest remuneration for the time and work involved, they must be offered in such a manner to avoid personal publicity for the author. This would mean that where the articles are published for circulation primarily in areas other than the author's residence and place of practice, there would be no objection to his name appearing in a modest by-line. In general, accompanying photographs of the author are not considered suitable".

Another problem referred to us concerned the occasional member of the profession who fails to accept responsibility for postoperative difficulty, particularly following tooth removal. This is not a new subject. While we believe that it is not a common practice, complaints have come from various sections of the country.

The specific complaint is of a practitioner who refused to see one of his patients in difficulty following tooth re-

moval, referring him instead to a medical practitioner. The least responsibility to the patient was to have seen him and if it was found that the condition was beyond the dentist's capacity to control, then the case should have been referred, not before.

It is difficult to understand how a member of the profession conducting himself in such a fashion can reconcile this attitude with the acceptance of the rights and privileges of a profession.

One other matter to which the Committee is giving serious attention, is the necessity for individual members of the profession to contribute to the general life and welfare of the community by active participation in its social activities.

In past generations the great esteem and respect with which professional men were regarded in their communities was derived not only from a respect for skill and knowledge in their particular field, but also, and in a large measure, from

their particular interest and contribution to the welfare of the community as a whole. Today, criticism is heard that we dentists as individuals do not take part to an expected degree in the general activities of the community. These ideas are not new, and have been stated by others previously; but it is a certainty that unless a great many more, if not all of us, are prepared to offer real assistance, if not leadership to our own community life, then we must be prepared to forfeit the standing of true professionals. Surely, the basic qualifications for entrance into the profession ensure the ability to give assistance and leadership to community enterprises.

Your Committee stands ready to receive or to offer whatever guidance it can in matters relating to the "keystone" of the profession—the customs, habitual conduct, the character—the ethical standards of its members.

J. D. McLean, Chairman.

NATIONAL RESEARCH COUNCIL SENIOR DENTAL RESEARCH FELLOWSHIP

The Associate Committee on Dental Research offers one Senior Dental Research Fellowship of an annual value from \$3000 to \$5000. This may be renewed annually for a period not exceeding five years.

This award will be granted only to a Canadian citizen who has had several years post-graduate training and has demonstrated his capacity for independent investigation. A successful candidate may also apply for a Grant-in-aid of his research work with which to pay assistants or buy equipment. In general the provisions of the Regulations Governing Graduate Dental Research Fellowships shall apply to these awards, unless clearly not applicable.

Application should be made, not by the prospective Fellow, but by the President of the University (on the recommendation of the Head of the Department, and of the Dean of the Dental Faculty concerned), who must undertake to provide research facilities and an honorary appointment within the structure of the Dental School.

Each candidate should complete the regular form of application for a Graduate Dental Research Fellowship of the National Research Council and submit it, in the first instance, to the Head of the Department, together with the required supporting documents.

Application for a Senior Dental Research Fellowship, and all required supporting documents, must be received not later than 15 October or 1 February, for awards to be made in the Fall and the Spring each year, tenable from 1 July following.

Address all correspondence to:

The Awards Officer,
National Research Council,
Ottawa, Canada.

Economic Security

An Education Fund for the Dentist's Children

by E. L. R. WILLIAMSON, M.B.E., B.P.A., F.R.E.S.,

*Consulting Economist, and Administrator
of the C.D.A. Plan*

It is probable that the predominant long-term objective of professional men is that his children shall receive the same standard of educational advantage that he himself received. It will be generally agreed that this is right, morally, socially, and economically. From the economic aspect alone, university training is more than worth while: It is a statistical fact that it will increase average life-time earnings by more than \$100,000.00.

But turning objective into attained fact presents certain problems: Minimum expenditure per year for tuition and books in college is approximately \$1,000.00; few men can meet such a sum wholly out of current income. Advance savings, therefore, are necessary; the earlier commenced, the easier the task: e.g., \$183.00 per year will provide the essential \$1,000.00 per year for four years starting age eighteen, if commenced before the child is six months old; but \$278.00 is required by age five; and \$434.00 by age nine.

The next question arising is that of the savings medium. Ordinary investment in securities has two disadvantages; first, that the market may be disadvantageous at the child's college age and there will be no time to await a favourable change in the market; second, the interest earnings of such investments, even though registered in the name of the child, are fully taxable to income of the parent, thus accruals are largely lost and compounding of interest an impossibility. Real property investment is even more difficult since the swings in such values are very much slower than those of securities.

Finally, there is the vital question of

what happens to the education fund in the event of the father's premature decease, or his disability for an important period of time during the child's minority. Obviously insurance alone amongst the various types of investment can meet this important contingency, and insurance is one of the few forms of savings which can be halted, by the "paid-up" option at any stage without forced liquidation or loss. Further, insurance presents the only form of interest earning investment which is free of Income Tax.

With the exceptional advantages which insurance presents, it is unfortunate that so often professional men are sold types of contracts which are ill-adapted for an "educational fund." Whole life or limited payment life taken on the life of the father will produce requisite funds only in the event of the decease of the father before the child reaches college age, and the so-called alternative of the "cash surrender value" will produce a sum totally inadequate to the need. It should be added that it is not often that the cash value plus all "dividends" will equal even the original premiums.

The alternative approach so often observed of, say, a "20 Pay Life" on the life of the child is even more unsatisfactory since the capital sum is not produced even by the decease of the father, and the "cash surrender value" is as inadequate as in the case of the contract on the father's life.

We have before us an example of a "20 Pay Life" case in which a dentist has undertaken an "Educational Plan" for which he is paying \$58.31 annually. In thirteen years, when the child is 18, he will have paid in \$758.03, but in return will receive only \$492.50 for the total educational fund. Alternatively, Cash Option at age 25 would be \$865.00, but he will have paid in \$1,166.20. Obviously, he would be far better to put the money in the bank, or even to make an invest-

ment which, even after a substantial depreciation in value, would still return more than he is obtaining under this contract. It is an example of the many misuses of Insurance for educational purposes which have come to our attention.

A fifteen or twenty-year Endowment is less unsatisfactory since it can be made to produce the full sum required, but such contracts contain a mortality charge against the life of the child (See March issue of the Journal), and this devours the interest earnings to the extent that normally only the original premiums are returned, even after allowing for "dividends."

The only type of assurance contract efficiently performing the task of providing an educational fund is the "Child's Education and Deferred Assurance" contract including waiver of premium in the event of the disability or decease of the father. This contract will produce the full sum required for the education of the child in all circumstances: the father alive and well, alive but disabled, or deceased. The premiums are free from mortality charge on the child's life, and it is thus a profitable form of savings—particularly after tax is considered—whilst the provisions for automatic completion in unfortunate circumstances make it the conclusive answer to the problem.

Over and beyond the primary consideration of assuring the child's education is that of insuring the child's insurability throughout his own life: firstly, to ensure that he will be free of the handicap of going through life without insurance, since a small but definite number of children reach their majority totally uninsurable; and secondly, to secure for the child the advantage of very substantial

savings; for example, the \$183.00 premium referred to above will also ensure without medical evidence—\$30,000.00 of whole life assurance or \$25,000.00 endowment at age 65—a cost of less than one-third that which the child would have to pay at say, age 25, even if a "first-class risk" at that time.

In the case of a girl, a university education is not so unqualifiably essential as for a boy, but most professional families today desire college for their daughters. For a girl there is at least one contract available which provides an option that she may transfer the assurance on her own life, after the option age and her marriage, to the life of her husband without medical evidence of his insurability, and the contract remaining her property, free of Succession Duties. Thus it is possible even in infancy to guarantee the economic security of a daughter and her future children.

Both the Education Benefit and the Deferred Assurance Benefit can be exercised, if the Education Benefit is taken as a loan to be repaid after the child is established in profession or business. Option ages of both 21 and 25 are available, but 25 is preferable for the child who will enter the professions as this will allow for training and establishment in practice before he assumes responsibility for his own contract.

In sum, it is possible to secure the child's education and a choice of other advantages having an important effect throughout life, a savings medium which is at once profitable and secure in all predictable circumstances. But great care must be exercised in selection of the means because there are many pitfalls in several directions.

The Provinces

Nova Scotia

Nova Scotia Dental Association elected Dr. A. D. MacGregor of Truro as their president at a recent meeting held in Halifax.

The following new officers were also named: Dr. L. J. Archibald of Halifax, senior vice-president; Dr. D. C. Eaton, Halifax, junior vice-president; Dr. A. B. Haverstock, Halifax, secretary.

Saskatchewan

Dr. R. S. Locke, who was awarded the Mendel Nevin Fellowship in Anaesthesiology, said farewell to the Saskatoon Society to study in Pittsburgh.

Dr. Locke graduated from Toronto in 1953 and practised with his father in Saskatoon. During his college course he was awarded a gold medal in anesthesia. As a result of his interest and record he was awarded this very valuable Fellowship. He commences his 24 month course in Pittsburgh early in September where he will study under Dr. Leonard Monheim.

Upon completion of the fellowship studies, Dr. Locke returns to the Faculty of Dentistry in Toronto where he will give part time service and also set up a private practice.

Dr. and Mrs. Locke will be missed in Saskatoon, and the Dental Society wishes them every success in the future.

Manitoba

Alderman H. B. Scott's motion on fluoridation of Winnipeg's water supply raises only one new issue. The pros and cons of fluoridation itself have been discussed at great length in the past. It has the widespread approval of medical and dental groups across Canada as a recognized method of combatting dental decay in children. The barrier to it here, so far, has been the need to save money at budget time. Now Alderman H. B. Scott wants the matter put to a referendum at the next civic elections to let the voters decide whether or not they want fluoridation.

The procedure of a referendum is a valuable part of local government. It is a proper way of deciding matters that are of great controversy or involve large expenditures of money. But it is a device, like many others, that will be devalued by too frequent use of it. Indeed, there has been of late a ten-

dency to ignore the clear decisions made by referendum. This valuable safeguard is being brought into disrepute.

Fluoridation clearly does not warrant a referendum. It raises no new issue of principle; the arguments are all ones resting on medical authority; there is no political or business issue of the kind in which every man's opinion is nearly as good as his neighbour's; no great expense is involved. If fluoridation is a matter to be put to referendum, almost every question before Council should be subject to a similar vote and municipal government would be reduced to absurdity.

City Council, in short, should make up its own mind about fluoridation. The idea of a referendum is misconceived and should be set aside without hesitation.

Editorial—Winnipeg Free Press

Quebec

The summer has been quiet for the **Montreal Dental Club**, but a few of its members have been quite active; among the foremost in this field was Dr. Howard Oliver. He took off early in the summer for Eastbourne, England, where he attended a convention of the European Orthodontic Association; whilst there he became a member of that association. From England, he flipped over to Paris where he lectured to the "Ecole Dentaire." The sojourn continued to Italy and Greece and finally arrived in Turkey, where another series of lectures was given at the University of Istanbul, with the help of an interpreter. Back to Vienna, thence to Bonn, Germany, where he attended the "Club Internationale de Morphologie Faciale." Amsterdam was the next port of call with the termination at the University of Edinburgh in Scotland. He is back home now catching up on his golf.

Speaking of golf, the summer meet of all the faithful golfers took place this year at Grand Mere. It was our first trip to this spot and we were all in for a wonderful surprise. The course was excellent and all those who attended can't wait to get back. We were a little discouraged with the rain but the day of the meet it cleared and all went very well. The defending champion, Dr. Roy Dohn held on to his much coveted trophy. The Shawinigan Falls pro, Dr. Gordon Crutchfield, took care of the low net, Dr. Bob Harvey won the second low net and Dr. Roger McMahon the second low gross. There were a few of the par breakers missing from this meet among the



Dr. Ralph Sommer addresses the 10th anniversary dinner of the Montreal Endodontia Society. Left to right: Dr. A. D. Richardson, Dr. Sommer, Dr. M. Archambault, Dr. H. Pearson.

most steady being Dr. Doug Armstrong who has won the low net so consistently in the past; however, he had a very good excuse. A great deal of thanks must be extended to Dr. Arnold Mitchell who was responsible for the location of the meet this year, and to Dr. Paul Ramsay who was in charge of the meeting. Next year a bigger turnout than ever is expected.

Ontario

The fall months are very active months for the members of our profession. It brings with them the many activities of our faculty and student festivities, the meetings of our Academy and the various local societies but October in particular has come to be remembered by an ever increasing number of our profession for the annual meeting of our *Dental Alumni Association* which is being held this year at the Royal York Hotel Roof Gardens on Friday evening October 15th at 6.45 p.m.

You will be treated to an excellent dinner with numerous prizes for the ladies followed by an outstanding floor show after which dancing will be provided by Len Dukes Orchestra.

Those who have been there before never miss it.

Obtain your reservations early from:—



Dr. V. Tremblay, president of the Montreal Endodontia Society; Dr. D. Shizgal, secretary-treasurer; Dr. E. Dorion, vice-president, and Dr. G. Zimmerman, past-president.

Dr. R. C. Moore, 2 Grenview Blvd., Toronto, or:

Dr. George Werry, Oshawa, Ontario.

Many of you will wish to attend the festivities of Home-coming weekend on October 29th and 30th.

1. To attend the McGill-Varsity Rugby game on the 30th.
2. To enjoy the Open House on Sunday, October 31st, sponsored by your Alumni and the Faculty of Dentistry from 3-5 p.m.
3. To witness the student parade of floats on Saturday morning, October 30th, and cheer for the students of your own alma mater who have won 1st prize for their efforts in the last two successive years.
4. To attend the students Golf Tournament on Thursday, September 30th at 1.00 p.m., St. Andrews Golf course. (Something all golfers should enjoy.)
5. A cordial invitation is extended to every Alumnus and members of our profession with their wives to attend Open House at the Connaught Medical Research Laboratories where a programme and refreshments will be provided by the Director, Dr. R. D. Defries, on Wednesday, November 27th at 8.00 p.m.

These are some of the activities sponsored by your Dental Alumni. Will you encourage them by your presence?

J. E. T.

It was announced recently by **Hon. Paul Martin**, Minister of Health and Welfare, that the Dominion Government had approved a general public health grant of \$14,334 to support a programme of preventive dentistry for school and pre-school children under the direction of the Kingston Health Department and Dental Public Health Committee.

Dr. Arthur E. Hilliker, of the Ontario Hospital, St. Thomas, was recently elected president of the St. Thomas branch of the Navy League of Canada.

British Columbia

According to its constitution the **British Columbia Dental Association** has six standing committees, the chairmen of which are appointed each year.

Dr. C. M. Whitworth, President, has announced that these men will head committees:

Dental Health—**Dr. A. Poyntz**

Public Relations—**Dr. D. B. McDonald**
 Legislation—**Dr. W. A. Jefferies**
 Library—**Dr. G. A. C. Walley**
 Nominations—**Dr. H. R. Turner**
 News Bulletin—**Dr. D. H. Munro**
 Other general and special committee chairmen who have been appointed are as follows:
 Compensation Board—**Dr. L. F. Marshall**
 Health Insurance Studies—**Dr. W. R. Scott**
 Hospitals—**Dr. W. L. Elliot**
 Joint Office Management—
 Dr. D. J. Sutherland
 Dental Laboratories—**Dr. F. J. Marshall**
 Membership—**Dr. R. L. Horne**
 Convention—**Dr. H. L. Purdy**
 Bank Loan—**Dr. W. J. Chambers**

For the current season the **Vancouver and District Society** has instituted a new kind of membership fee which is optional. The "active participating membership" includes the usual membership fee, plus the cost of dinners at the monthly meetings. The total sum, it has been ascertained, will be deductible for income tax purposes.

—**D. H. M.**

General News

The executive council of the **Federation Dentaire Internationale** will meet in Athens September 25-30, 1955, in conjunction with the scientific meeting of the Greek Dental Society. Further information may be obtained by writing **Dr. Themis Mavrogordato**, Queen Sophia Ave., 6, Athens, Greece, or **Dr. G. H. Leatherman**, F.D.I. secretary-general, 35 Devonshire Place, London W.1., England.

Dr. Elmer S. Best, editor of "Dental Survey" died July 9 at the age of 73. **Dr. Best** graduated from the Chicago College of Dental Surgery in 1906 and attended the Royal College of Dental Surgeons in Toronto, as well. He is the author of more than 60 articles in dental and other professional publications.

Dr. Best served as secretary of the International College of Dentists from 1937 until his death, and had been registrar of its United States section since 1935. He was past president of the Minneapolis District Dental Society and a past president of the Xi Psi Phi dental fraternity. He was a member of the American Association for the Advancement of Science and of the International Association for Dental Research.

Establishment of five annual scholarships to Canadian dental schools was announced at the annual dinner of the **Canadian section of the International College of Dentists**.

A board of trustees set up by the Canadian organizations will administer a fund providing scholarships to faculties of dentistry at Dalhousie University, University of Montreal, McGill University, University of Toronto, and University of Alberta.

They are the first established by the Canadian section of the I.C.D.

Dr. J. F. Edgecombe of Saint John, retiring as president of the section, presided at the dinner in the Algonquin Hotel. Guest speaker was **Dr. W. T. Ross Flemington**, president of Mount Allison University.

During the dinner, held in conjunction with the annual meeting of the Canadian Dental Association, **Dr. J. D. McLean**, Dalhousie University, was granted a fellowship in the Canadian section. He was presented for membership by **Dr. J. S. Bagnall** of Halifax.

Dentists at the dinner were welcomed to N.B. by Lieutenant-Governor **D. L. MacLaren**.

New officers of the Canadian section of the I.C.D. are: President, **Dr. C. L. Strachan**,

London, Ont.; president-elect, Dr. John W. Clay, Calgary; vice president, Dr. Bert Hurst, Brandon, Man.; treasurer, Dr. John A. Bothwell, Toronto; registrar, Dr. Frank Martin, Toronto.

Dr. J. H. Johnson of Toronto was elected president of the **Canadian Society of Oral Surgeons** at its first annual meeting, held in St. Andrews-by-the-Sea in conjunction with the Canadian Dental Association convention. Dr. Douglas Tanner of Toronto has been serving as president of the Society.

Other officers are: President-elect, Dr. Scott Hamilton, Edmonton, dean of the dental faculty at the University of Alberta; vice-president, Dr. R. Bier, Winnipeg; secretary-treasurer, Dr. J. Methven, Toronto; councillors, Dr. A. Raymond, Montreal, and Dr. O. Croft, Halifax.

At the request of the council on dental education, a committee was established to prepare a report on the status of dental anaesthesiology. A guest at the meeting was Dr. Leslie M. Fitzgerald of Dubuque, Iowa, president of the American Dental Association and chairman of the American Board of Oral Surgery.

Next meeting of the society will be at Toronto in 1955, during the 1955 convention of the C.D.A., May 15-18.

A new clinical thermometer, described as more accurate and much faster than the present mercury type, has been developed by Col. George T. Perkins of San

Antonio, Texas, director of the dental division of the army medical service graduate school at Walter Reed Hospital. This new device, called "Swiftem," represents the first change in clinical thermometers since the mercury column type was introduced in 1867.

Dr. George F. Clarke, Boston, Mass., was installed as president for the fiscal year 1954-55 of the American Academy of Dental Medicine at the concluding session of its 8th annual meeting held at the Penn Sherwood Hotel. He succeeds Dr. Alvin H. Berman, Baltimore, whose term expired with the meeting.

Others elected to serve with Dr. Clarke in the new administration of the international group include Dr. S. Leonard Rosenthal, Philadelphia, president-elect; Dr. William H. Copperthwaite, Red Bank, N.J., vice-president; Dr. William M. Greenhut, New York, secretary; Dr. George G. Stewart, Philadelphia, treasurer, and Dr. Irving Yudkoff, New York, editor of the Academy's Journal of Dental Medicine.

More than three hundred members and fellows of the Academy from all parts of the country, as well as several from foreign areas attended the session.

The Academy was organised in 1945 "To promote the study and dissemination of knowledge of the cause, prevention and control of disease of the teeth, their supporting structures and appendage parts, and related subjects; and to foster and promote a better scientific understanding between the fields of dentistry and medicine." It has an international membership of approximately one thousand.

The Corps

Brigadier E. M. Wansbrough attended the Board of Governors' Meeting and the Canadian Dental Association Convention at St. Andrews, N.B.

At the conclusion of the Convention, Brigadier Wansbrough inspected service facilities in Eastern Command.

Three R.C.D.C. dental officers presented table clinics at the C.D.A. Convention. The clinics presented were: "Algate Impressions for Indirect Inlays," Lt.-Col. S. K. Oldfield; "The Importance of the Surveyor in Partial Denture Design," Major L. C. Cameron; and "Complete Dentures," Major H. W. Hart.

No. 50 Dental Unit (M) with Headquarters at Halifax, Commanding Officer Lt.-Col.

J. E. Merritt, has been judged the winner of the General Efficiency Competition R.C.D.C. (M) and awarded the Moore Trophy.

No. 57 Dental Unit (M) with Headquarters at Winnipeg, Commanding Officer Lt.-Col. J. L. Warriner, has been judged the runner-up of the Competition and awarded the Trelford Trophy.

In addition, these Dental Units are eligible for cash awards made by the Royal Canadian Dental Corps Association of \$75.00 to the winner and \$25.00 to the runner-up.

Presentation of the above awards will be made at the Annual Meeting of the R.C.D.C. Association being held in Ottawa, 10-11 September 1954.

NATIONAL DENTAL EXAMINING BOARD OF CANADA

The following are the results of the June examinations of
The National Dental Examining Board of Canada:

Marcel Joseph Albinati, Father, Alta.	Allison Lewis Kelland, Halifax, N.S. (Operative Dentistry)
Cedric Barrington Allaby, St. John, N.B.	John Dennis Lillis Kennedy, Deloraine, Man.
Edward Francid Allison, Calgary, Alta.	Donald Kepron, Winnipeg, Man.
Manly Gary Badner, Toronto, Ont.	Harold Douglas Kern, Rush Lake, Sask.
Jacob Peter Bekker, Ryley, Alta. (Oral Medicine)	Cecil Ralph Kirton, Montreal, Que.
Jack Berman, Montreal, Que.	Dunstan Ivan Lazaruk, Edmonton, Alta.
Roger Dawson Bleakley, Islington, Ont.	Kenneth Edward Leslie, Edmonton, Alta.
Carl Nick Bolan, Regina, Sask.	Marsden Barton Levitt, Edmonton, Alta.
Bernard Benedict Boyko, Wynyard, Sask.	Jerry Litman, Winnipeg, Man.
Lee Ralph Busse, Edmonton, Alta.	John Scott Little, Edmonton, Alta.
Norman Buttermann, Montreal, Que.	William Sutherland MacIntyre, Montague, P.E.I.
Vincent Edward Capogreco, Ottawa, Ont.	John Warren MacKay, Saskatoon, Sask.
Donald Cameron, Chaloner, Montreal, Que.	Robert Sydney Margolis, Edmonton, Alta.
Ralph Conter, New Waterford, N.S.	Ludwig Ferdinand Matthews, Benito, Man.
Owen Wilson Cornish, Edmonton, Alta. (Oral Surgery)	Nickolas Leo Mazer, Kuroki, Sask.
Wentworth Burns Lewis Decker, Dartmouth, N.S.	Harry Kenneth Meisner, North Brookfield, N.S.
William Kenyon Dickie, Campbellton, N.B. (Oral Medicine)	Joseph Paul Mergl, Winnipeg, Man.
Leonard Lawrence Druckman, Outremont, Que. (Oral Medicine)	Henry Mikelberg, Montreal, Que.
Leonard Andrew Dutkowski, Kelowna, B.C.	Jack Dean Newby, Sardis, B.C. (Oral Medicine)
Elmer Roy Eburne, Prince Rupert, B.C.	Robert Arthur Newton, St. Lambert, Que.
Harold Laurie Fleischman, Winnipeg, Man.	Douglas Alan Norbury, Toronto, Ont. (Oral Medicine)
Gordon Stuart Foster, Calgary, Alta.	James Edmund M. Peacock, Montreal, Que.
Spencer John Gallagher, Edmonton, Alta.	Robert Matthew Perry, Toronto, Ont.
Harold Albert Grammer, Toronto, Ont.	Benjamin George Riggs, Grand Bank, Nfld.
Morton Marcel Moses Greenblatt, Montreal, Que.	Lyons Clinton Ringrose, Smooth Rock Falls, Ont.
Calvin Graham Halliday, Saskatoon, Sask.	George Seiichi Sakumoto, Iron Springs, Alta.
Harry Jack Hann, St. John's, Nfld.	Alexander Samuel Shachnowich, Canmore, Alta.
William Pritchard Hanna, Calgary, Alta.	Nicholas Sidorchuk, Montreal, Que.
Maurice Allen Harquail, Dalhousie, N.B.	Joseph Sikora, Edmonton, Alta. (Oral Medicine)
Clifford Ronald Hill, Moose Jaw, Sask.	Bernard Spring, Windsor, Ont.
Herbert Hops, Montreal, Que.	Donald Alan Stewart, Summerside, P.E.I.
Yataro Iwasaki, Kamloops, B.C.	Ronald Joseph Taylor, Burlington, Ont.
Malcolm Campbell Johnston, Montague, P.E.I.	Warner Fred Walter, Melville, Sask.
Evan Hurley Jones, Montreal, Que.	Gerald Neil Waterhouse, Edmonton, Alta.
Ronald Earl Jordan, Edmonton, Alta.	Michael Weiss, Montreal, Que.

Correspondence

The Editor
Journal of the Canadian
Dental Association.

Dear Doctor Dunn:

Upon re-reading the May issue of the Journal I came across the article on page 292 under General News. This was the article stating that the anti-enzyme dentifrices have not been found to live up to the claims made for them.

While I like most of the profession deplore the extravagant claims made in commercial ad-

vertising in respect to the efficacy of various dentifrices, I feel that we should not be too hasty in discarding as useless what may well be a genuine effort to assist in the fight against dental caries.

I have no doubt as to the qualifications of the gentlemen mentioned in the article whose research revealed the failure of the anti-enzyme ingredient, but I do wonder if a fair trial has been given the dentifrice before its condemnation. Let us bear in mind the history of fluorine upon which very few authorities would go out on a limb before a five

year trial had established its effectiveness. Contrariwise we have authorities condemning something which has been in general use less than a year.

I feel that since the anti-enzyme dentifrices do no harm and clean teeth as well as other tooth-pastes that I shall continue to recommend their

use on the premise that it might, and I emphasize *might* help reduce the number of cavities formed; and shall continue to do so until it has definitely been proved to be of no use, to be of harm, or of course something better comes along.

Yours fraternally,
Murray Wertman D.D.S.

In Memoriam

James Wickliffe Bell.—Dr. James W. Bell of Hamilton died on August 19th, at the age of 85.

Born in Blyth, Ontario, Dr. Bell received his early education at Hamilton. He graduated from the Royal College of Dental Surgeons of Ontario in 1894, and then practised in Hamilton.

Dr. Bell served as a Major V.O. with the Argyle and Sutherland Highlanders of Canada. He was a member and past master of the St. John's Lodge, A.F. & A.M., a member and the first principal of St. John's Chapter, R.A.M., and a member of the Murtion Lodge of Perfection. He also served on the Hamilton Board of Education and the Hamilton Board of Health.

Dr. Bell was a member of the Church of Ascension, Hamilton.

Surviving are a son, Dr. J. W. Bell, Jr., of Hamilton, and one grandson, John W. H. Bell.

Henry Ross Cleveland.—Dr. Henry Ross Cleveland died suddenly on August 8th at his home in Montreal at the age of 61. Born in Richmond, Que., in 1893, he attended Montreal High School and McGill University, graduating in 1915. He went overseas with the Canadian Dental Corps in the First World War and was dental officer to No. 9 Field Ambulance, R.C.A.M.C. in France. He returned to Montreal where he practised until the start of the Second World War when he again served overseas. He returned to Canada to take over No. 29 Dental Company at Camp Borden retiring later from the army with the rank of lieutenant-colonel.

He was a former captain of the McGill tennis team, later a vice-president of the Province of Quebec Lawn Tennis Association, non-playing captain of Canada's Davis Cup team in the late 1920s.

He was a former president of the Mount Royal Tennis Club and the Montreal Dental Club and was a member of the Montreal Indoor Tennis Club and the University

Club. He was also a member of the Black Watch Association.

Survivors include his widow, Mabel Jane Cleveland, a son, Donald of Toronto, a brother, Dr. E. T. Cleveland, an uncle, Dr. E. A. Cleveland, and two grandchildren.

John Carruthers Green.—Dr. John C. Greer of Peterborough, Ontario, aged 54, died suddenly of a heart attack in January, 1954.

Dr. Green was born and educated in Peterborough, and graduated from the Faculty of Dentistry, Toronto, in 1920. He first worked professionally in Norwood, Ont. In 1923 he moved to Peterborough where he practised, except for the period of the second world war when he served as a major in the Royal Canadian Dental Corps.

Dr. Green was a member of the Masonic Lodge of Moore Preceptory, and a Royal Arch Mason in Peterborough.

He is survived by his widow, the former Jean Eagleson, and two sons, John and Robert.

Wallace Barrett Mitchell.—Dr. Wallace Barrett Mitchell of Indian Point, Burlington, Ontario, passed away on August 25th. He was 55 years of age.

Born in Chilliwack, B.C., Dr. Mitchell received his early education at Woodstock, Ontario. He graduated from the Royal College of Dental Surgeons in 1920, and practised in Hamilton.

Dr. Mitchell was a past president, secretary and treasurer of the Hamilton Dental Academy; an executive member of the Kinsman Club; and a member of the Barton Lodge, A.F. & A.M. He was very active in church affairs, being a member of the Canadian Baptist Foreign Mission Board, a member of the Brotherhood Committee of Canadian Convention, and a vice-chairman of the Deacons' Board.

Surviving Dr. Mitchell is his wife, the former Dorothy Baird; one daughter, Mrs. W. G. Newman of Dunbarton; and one son, Robert.

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1955	Toronto, Ontario	May 15th—18th
1956	Banff, Alberta	June 3rd—6th

FUTURE EVENTS

Date	Function	Location	Officer	Address
Oct. 13- Nov. 4	Annual Meeting of American Institute of Dental Medicine	Palm Springs, Calif.	Miss Marion Lewis	220 Channing Way, Berkeley 4, Calif.
Oct. 20-22	Montreal Dental Clubs' Annual Fall Clinic	Montreal	Dr. Bruce Ward	1414 Drummond St., Montreal, P.Q.
Nov. 5	Annual Meeting of Academy for Oral Rehabilitation of Handicapped Persons	Miami Beach, Fla.	Dr. Hugh Kopel	19933 Livernois Ave., Detroit, Mich.
Nov. 6	American Academy of Gold Foil Operators	Miami, Fla.	Dr. Gerald Stibbs	School of Dentistry, University of Washington, Seattle 5, Wash., U.S.A.
Nov. 6-7	American Academy of Implant Dentures	Miami Beach, Fla.	Dr. Wm. Barb	668 E. Maple Rd., Indianapolis, Indiana, U.S.A.
Dec. 5	Mid Annual Meeting of American Academy of Dental Medicine	New York City	Dr. William Greenhut	124 E. 84th St., New York 28, N.Y.
Jan. 21, 1955	Public Health Workshop on Dental Programmes in Industry	New York City	Dr. Alfred Asgis	First District Dental Society, Hotel Statler, New York, N.Y.

SHORT GRADUATE COURSES

Date	Course	Location	Address
Nov. 29- Dec. 3	Dental Radiology	University of Toronto	The Dean, Faculty of Dentistry, University of Toronto 230 College St., Toronto 2-B, Ont.
Jan. 17-21, 1955	Periodontics	as above	as above
Jan. 23- Feb. 6	Orthodontics	Temple University	Dr. Louis Herman, Director of Postgraduate Studies, Temple University Dental School, 3223 North Broad St., Philadelphia 40, Pa.
Jan. 26-27-28	Clinical Occlusion	as above	as above

Journal

DE L'ASSOCIATION DENTAIRE CANADIENNE

La prévention des variations volumétriques de l'amalgame par une manipulation appropriée

par JEAN MALISKA D.D.S., Verdun, Qué.

1.—RESUME DES AUTEURS

Les recherches rigoureusement scientifiques faites par Black, Gayler, Gray et d'autres savants chercheurs, nous permettent aujourd'hui de faire nos amalgames avec le meilleur matériel possible. Malgré cela, il se produit parfois des échecs: soit que le volume final de l'obturation soit trop grand—causant une douleur ou débordant la cavité—ou qu'il soit trop petit, permettant l'infiltration de la salive et de microbes, causant ainsi une nouvelle carie qui reste même cachée pour un certain temps. C'est la manipulation déficiente qui est responsable de ces non-réussites.

Pour l'exécution du présent travail, les docteurs deMontigny et Deschênes m'ont aidé de leurs conseils et m'ont suggéré des idées; le docteur Brouillet s'est aimablement mis à ma disposition avec son malaxeur mécanique; madame Franken m'a aidé pour la correction de la langue. Je les en remercie très sincèrement.

Je désire également remercier tout particulièrement monsieur Pierre Demers, D.Sc., professeur à la Faculté des Sciences de l'Université, qui m'a largement donné de son temps précieux pour me guider dans la réalisation des expériences décrites.

Pour donner une idée d'une telle responsabilité, nous allons décrire les différentes phases de manipulation de l'amalgame en rapport avec les changements volumétriques qu'elles provoquent dans le mécanisme de l'amalgamation et du durcissement. Pour cela, nous exposerons le résumé des auteurs cités plus haut et essayerons de décrire quelques petits tests faits au laboratoire, à titre de démonstration, sur l'existence des variations sus-mentionnées et sur les possibilités de les contrôler.

Comme nous le savons, l'amalgame est un alliage de métaux dont l'un est du mercure. Pour l'art dentaire, on a choisi les quatre métaux: argent, étain, cuivre et zinc (ou Ag, Sn, Cu et Zn), en alliage dans des proportions définies. (1) Cet alliage est préparé sous la forme de petites particules dont la grosseur est également définie. En les mettant en contact avec le mercure, il se produit l'amalgamation qui est suivie du durcissement.

L'argent (Ag) et l'étain (Sn) sont les principaux constituants (2) de l'alliage

employé en art dentaire (Ag—65% minimum; Sn—25% minimum). Leur combinaison avec le mercure (Hg) est susceptible de se modifier suivant la manipulation; tandis que le cuivre (Cu) et le zinc (Zn) jouent le rôle de modérateurs et ne subissent pas l'influence de la manipulation. (3) Ag et Sn, dans l'alliage dentaire, se trouvent en grande partie sous la forme d'un composé intermétallique $Ag_3 Sn$. (4) D'après Gayler (5), c'est $Ag_3 Sn$ qui réagit principalement avec Hg. Une fois que le malaxage (ou trituration) est commencé, $Ag_3 Sn$ absorbe une quantité de Hg. Il en résulte la formation des solutions solides (6): de Ag et Sn avec Hg, ou phase $\beta 1$. Ensuite "Sn—Hg", ou phase $\sqrt{2}$, se sépare de la phase $\beta 1$. En résumé: $Ag_3 Sn + Hg \rightarrow \beta 1 + \sqrt{2}$ (première réaction). Cette réaction du malaxage aboutit à la formation d'une couche ($\beta 1 + \sqrt{2}$) autour des particules d'alliage. Le passage de Hg vers les particules devient plus difficile. On admet qu'une partie des particules reste emprisonnée indéfiniment par cette couche de solutions solides. En d'autres termes, le malaxage produit l'amalgamation.

Deuxième réaction: elle suit immédiatement la condensation. On a la quantité de Hg libre réduite par la formation des solutions solides ($\beta 1 + \sqrt{2}$) dans la première réaction et par l'expulsion pendant la condensation. Ce reste de Hg libre réagit avec les constituants des solutions ($\beta 1 + \sqrt{2}$) pour produire une nouvelle phase, $\sigma 1$, qui est le composé intermétallique $Ag_5 Hg_8$, de nature cristalline. Il se produit aussi un peu de $\sqrt{2}$ qui est "Sn—Hg" (solution) et il reste encore une certaine quantité de $\beta 1$.

En résumé: $(\beta 1 + \sqrt{2}) + Hg \text{ libre} \rightarrow \sqrt{1} + \beta 1 + \sqrt{2}$.

La présence de $\sqrt{1}$ indique la cristallisation ou durcissement de l'amalgame. Ces deux réactions se font très rapidement au début. Une grosse partie de $Ag_3 Sn$ va réagir dans 1½ heures, à partir du commencement du malaxage, avec cristallisation consécutive, mais l'équilibre sera atteint à la température de la bouche,

dans une période indéfinie ou peut-être jamais.

La théorie de Gayler nous dit plus loin (7) que la formation des solutions ($\beta 1 + \sqrt{2}$) susmentionnées provoque la contraction initiale de l'amalgame, parce que le Hg se propage hors des interstices vers les particules d'alliage, pour se combiner chimiquement avec elles. Ici, on tire la première conclusion importante que toute manipulation qui augmente la quantité des solutions ($\beta 1 + \sqrt{2}$), augmente aussi la contraction initiale.

La deuxième réaction est dominée par la formation des cristaux $Ag_5 Hg_8$, ou phase $\sqrt{1}$; la cristallisation produit l'expansion. Ici, on tire la seconde conclusion d'importance, que toute manipulation qui favorise la cristallisation (et diminue la formation de Sn—Hg, ou phase $\sqrt{2}$, favorable à la contraction), favorise aussi l'expansion de l'amalgame. Et au contraire, si la manipulation diminue le degré de cristallisation et augmente la formation de Sn—Hg, elle diminue aussi l'expansion de l'amalgame, ou même, cause la contraction.

Gray (9) dit que la contraction initiale de l'amalgame est freinée ici et là par les contacts entre les îlots des particules d'alliage, enveloppés de $\beta 1 + \sqrt{2}$ (solutions). Cette résistance mécanique est assez considérable contre la contraction, mais l'est beaucoup moins contre la dilatation produite par la cristallisation. Les deux réactions décrites plus haut se continuent encore après la cristallisation initiale. Avant que l'équilibre soit atteint, la réaction des solutions devient prépondérante et il en résulte une contraction partielle qui, pratiquement, ne diminue pas l'expansion produite par la cristallisation. L'image graphique (fig. 1) (10) du durcissement de l'amalgame normal, nous montre les changements volumétriques pendant les premières 24 heures. D'abord, la contraction initiale est très peu marquée et de courte durée (résultat de la première réaction des solutions solides ($\beta 1 + \sqrt{2}$), puis la courbe monte jusqu'à l'expansion maximum (cristallisation) qui est atteinte en 5 à 6 heures à partir du commencement du

malaxage. Finalement, l'équilibre est atteint par la prépondérance temporaire de la réaction des solutions solides sur celle de la cristallisation, causant la minime contraction dont question ci-dessus.

Le Bureau des Standards (U.S.A.) spécifie que l'amalgame doit avoir une expansion de 3—13 μ /cm, qui se produit dans les premières 24 heures. (11) (12) Cette expansion assure une meilleure adaptation de l'amalgame aux parois de la cavité. Surtout, elle est importante pour compenser la contraction de l'amalgame, plus forte que celle de la dent, en cas d'abaissement de la température. Par exemple, en mangeant de la crème glacée, la contraction linéaire de l'amalgame est deux à trois fois plus forte que la contraction des tissus de la dent. (13)

Abordons maintenant l'étude de chacune des phases de la manipulation en rapport avec les changements volumétriques de l'amalgame.

Malaxage

Par définition, c'est un processus mécanique qui, par le frottement des particules en présence de Hg, facilite le déclenchement des réactions de l'amalgamation. (14) En général, le résultat de l'augmentation du temps de malaxage est la diminution de l'expansion ou l'augmentation de la contraction de l'amalgame. (15)

En regardant les courbes (fig. 2), nous voyons (16) qu'en prolongeant la trituration (les autres conditions étant les mêmes), on obtient des amalgames de plus en plus contractés. La première courbe est idéale parce qu'elle représente une contraction initiale nulle, ou presque nulle, et l'expansion qui suit dépasse un peu 9 μ par cm.; c'est parce que le malaxage est de courte durée (50 sec.). Il ne se produit pas beaucoup de solutions solides ($\beta 1 + \sqrt{2}$), donc pas de contraction initiale sensible. Cet état de choses favorise la formation des cristaux (Ag_2-Hg_2), plus que celle de Sn—Hg. (17) Cela donne une expansion idéale; la contraction finale est minime et n'affecte pas la qualité de l'amalgame qui conserve son

expansion. Les 2e, 3e et 4e courbes représentent une contraction progressive à mesure que la trituration se prolonge. La 2e courbe est encore tolérable mais les 3e et 4e ne le sont plus. Elles représentent la contraction initiale plus forte et persistent plus longtemps; finalement l'expansion ne compense plus la contraction initiale, la contraction finale devient très sensible et l'état final de l'amalgame s'exprime par une contraction. L'explication théorique est la suivante (18). En prolongeant le malaxage, on obtient une plus grande quantité de solutions solides ($\beta 1 + \sqrt{2}$), d'autant plus que le malaxage brise les particules d'alliage et permet pour Hg, d'avoir des contacts plus nombreux. D'autre part, les réactions rapides créent l'état de cristallisation, état qui est compromis par une trituration prolongée. La contraction de l'amalgame est la conséquence de la production plus forte de solutions solides et de la destruction des cristaux. On peut donc dire que le surmalaxage produit la contraction.

Condensation

Si l'on ne varie que la force de condensation, on obtient alors, avec une plus grande force, une plus grande diminution de l'expansion de l'état final de l'amalgame. Mais par une condensation, même très forte, on n'obtient pas de contraction.

Gray admet que la condensation est essentiellement la continuation du malaxage en ce qui concerne les variations volumétriques. Une condensation plus forte augmente la quantité de solutions solides et expulse plus de Hg libre; comme conséquence, on aura une diminution des possibilités de cristallisation, ce qui veut dire aussi que l'expansion va être moindre.

Si la condensation est faible, beaucoup de Hg libre reste dans l'amalgame, ce qui rend possible une forte cristallisation, d'où résulte finalement une expansion excessive et intolérable pour l'art dentaire. En outre, l'écoulement plastique (en anglais "flow") peut augmenter trop considérablement. (20)

Écoulement Plastique (Flow)

Bien que cette propriété de l'amalgame

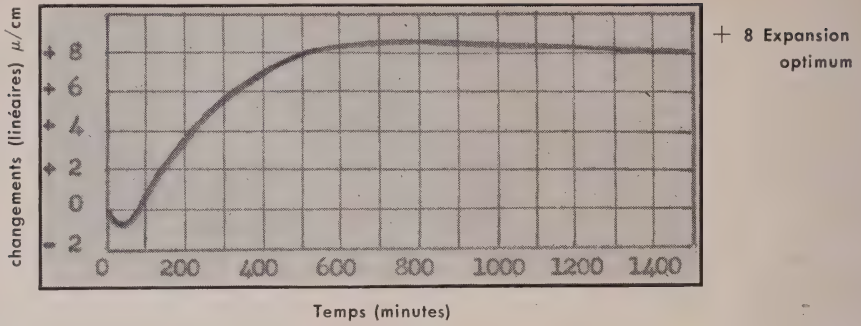


FIG. No 1 (10)

Courbe des changements (linéaires) de l'amalgame normal dans les premières 24 h.

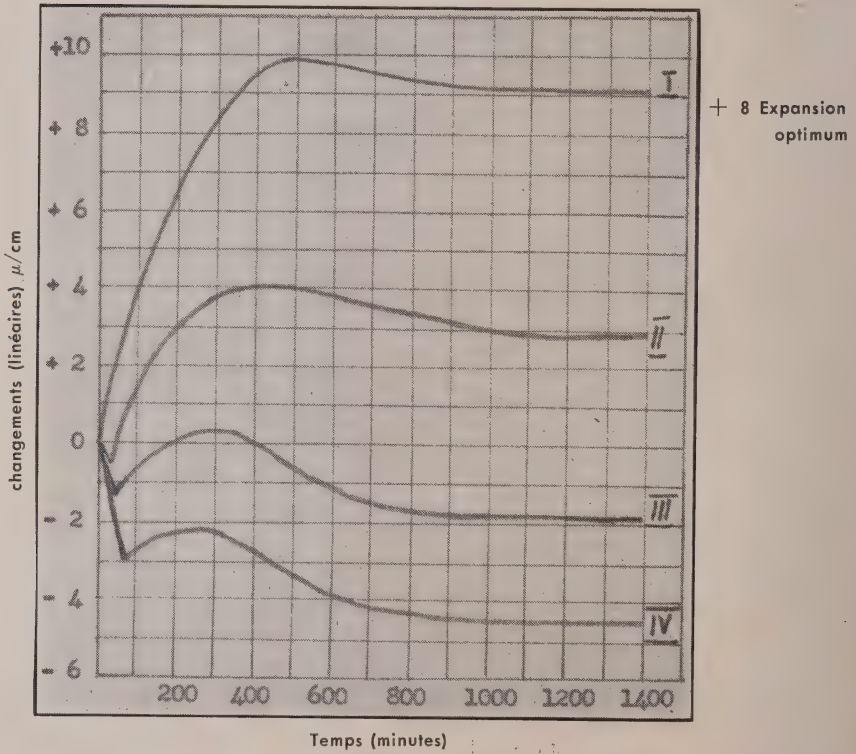


FIG. No 2 (16)

Courbes des changements (linéaires) de l'amalgame en rapport avec les variations du temps de malaxage

Durée du malaxage:

Courbe I: 35 sec. dans le mortier, 15 sec. dans le caoutch. (main)

Courbe II: 40 sec. dans le mortier, 60 sec. dans le caoutch. (main)

Courbe III: 60 sec. dans le mortier, 120 sec. dans le caoutch. (main)

Courbe IV: 90 sec. dans le mortier, 150 sec. dans le caoutch. (main)

regarde l'étude de sa dureté, ce qui dépasse le cadre du présent travail, il est utile d'en dire un mot. A la longue, l'écoulement plastique se traduit par le changement volumétrique de l'amalgame. Seulement, il n'est pas spontané comme l'expansion ou la contraction. C'est sous l'effet des forces masticatoires que l'amalgame commence à déborder les pourtours de la cavité. L'écoulement plastique existe toujours, mais une manipulation adéquate peut le réduire considérablement. En plus de la composition de l'alliage, c'est la forte condensation qui le diminue suffisamment. (22)

Contamination

Si durant le malaxage ou la condensation, l'amalgame entre en contact avec de l'humidité (cavité non asséchée, salive, eau, sueur des doigts, etc), le résultat est l'expansion tardive et excessive. C'est ce qui se produit lorsque l'alliage contient du zinc (Zn). Celui-ci réagit au contact de l'humidité en produisant du H_2 libre qui cherche à s'échapper de la masse de l'amalgame. Après 4 à 7 jours, H_2 est en quantité suffisante pour provoquer l'expansion de l'amalgame. Cette expansion continue indéfiniment et après quelques mois l'amalgame peut déjà déborder la cavité. Les meilleurs amalgames contiennent toujours du Zn et leur contamination par l'humidité a des conséquences désastreuses pour la valeur de l'obturation.

Prévention Des Changements

Nous avons vu que le malaxage, la condensation et la contamination qui dépendent de l'opérateur, ont une influence sur les variations volumétriques de l'amalgame. Il reste à décrire les moyens à prendre pour prévenir les changements excessifs, compromettant le travail professionnel. De nombreux tests de laboratoire et une longue observation clinique ont permis de découvrir la meilleure manipulation de l'amalgame. Nous profitons de ces expériences.

En ce qui concerne le malaxage, il est important de ne pas surmalaxer l'amalgame, mais aussi de réussir à obtenir une bonne et complète amalgamation.

La durée du malaxage est influencée par la grosseur des particules d'alliage et leur degré d'oxydation, par le fait d'employer un malaxeur mécanique, par la forme et l'état du mortier et du pilon, par la pression exercée sur le pilon et par la proportion d' "alliage: Hg". (24)

Le degré d'oxydation est plus fort si l'alliage est exposé à l'air pendant longtemps. L'oxyde empêche l'amalgamation. Pour la prévenir, il faut acheter l'alliage dentaire plus souvent et en petites quantités. (25) La meilleure grosseur des particules d'alliage est définie généralement par les manufacturiers. Des instructions spéciales indiquent s'il faut encore triturer les particules avant d'y ajouter du Hg. Le malaxeur mécanique fait le malaxage en 8 à 15 secondes. Des instructions spéciales indiquent également les détails de son emploi. Généralement, ce procédé donne une amalgamation très homogène et rapide, ce qui est avantageux pour les cas de grosses obturations, où on a la possibilité de préparer un nouvel amalgame pour finir le remplissage, évitant ainsi de le faire avec de l'amalgame sec (cristallisé). Le temps de malaxage doit être précis, sinon on aura un surmalaxage ou sous-malaxage.

Le mortier servant à cette opération, doit avoir un fond présentant une courbe régulière. La courbure du pilon doit suivre celle du mortier. Tous deux doivent être dépolis et ne pas présenter de petits trous (porosités). Il est bon d'accentuer l'uniformité de dépolissage du mortier et du pilon lorsqu'ils sont neufs ou quand l'usage les a rendus trop lisses. Pour ce faire, on emploie du carborendum FFF avec un peu d'eau dans le fond du mortier et l'on malaxe. (26) En supprimant les porosités, on évite l'accumulation de résidus de vieux amalgames dans le mortier. Un bon dépolissage rend la trituration plus facile et l'amalgame se fait plus rapidement, sans création de chaleur excessive.

La proportion "alliage : Hg" est à peu près de 5 : 8. Toujours, on a plus de Hg que d'alliage (en poids). Il appartient aux manufacturiers d'indiquer la propor-

tion nécessaire pour obtenir le meilleur amalgame possible. (27) Il est préférable d'avoir plus de Hg que moins, parce que l'excès est éliminé par la condensation.

Le mortier et le pilon doivent être propres et secs et à la température de la chambre. L'alliage doit aussi être à la même température, mais jamais en-dessous parce qu'il se produirait une condensation de vapeur d'eau et l'amalgame serait contaminé par l'humidité.

En malaxant, il ne faut pas exercer une pression trop forte. Pour éviter cela, il faut tenir le pilon avec trois doigts et malaxer en exerçant une légère pression à une vitesse modérée. On arrête le malaxage au moment où les particules d'alliage sont enveloppées par les couches $\rho 1 + \sqrt{2}$. A ce moment, la masse devient brillante, plastique, homogène, ayant une légère tendance à adhérer aux parois du mortier. (28) Une pression trop forte et une vitesse trop grande pourraient créer un excès de chaleur et causer la surtrituration, amenant la contraction. Si le malaxage est insuffisant (sous-malaxage), le résultat peut être la surexpansion de l'amalgame. (29) Généralement, il faut 75 sec. pour obtenir un malaxage suffisant. Il faut toujours lire les indications des manufacturiers et les exécuter scrupuleusement. Si c'est indiqué, il faut transporter la masse d'amalgame du mortier sur un morceau de caoutchouc et la mouler encore dans la paume de la main le temps prévu pour parfaire l'amalgamation.

Ne jamais faire d'addition supplémentaire de Hg après que le malaxage est commencé, ce qui diminuerait la dureté de l'amalgame. (30)

Passons maintenant à la condensation: l'essentiel, dans cette opération, est d'enlever l'excès de Hg et de faire l'insertion le plus vite possible pour éviter la cristallisation de l'amalgame malaxé. Il va de soi que la cavité doit être sèche et protégée de la salive (digue, rouleaux de coton) durant l'opération. On enlève l'excès de mercure de toute la masse préparée en la serrant légèrement dans un morceau de caoutchouc, avec trois doigts. Ensuite, on divise l'amalgame encore bien

plastique, en trois ou quatre morceaux. L'insertion du premier morceau couvre le fond de la cavité et les endroits de rétention. La condensation doit se faire très soigneusement et avec les condensateurs appropriés, pour que toutes les parties de la cavité soient atteintes et l'excès de Hg expulsé à la surface, puis enlevé. Le second morceau d'amalgame peut être privé de Hg plus que le premier, et ainsi de suite, mais la condensation doit être toujours forte, provoquant l'apparition de la surface liquéfiée; la couche suivante s'unira ainsi plus intimement avec celle déjà condensée. (31) Si la condensation est énergique et que le Hg n'apparaît plus à la surface, cela veut dire que l'amalgame est déjà trop durci et ne convient plus pour continuer l'opération. Une condensation prolongée au-delà de 3 minutes, rend l'amalgame sec et dur. On ne peut plus enlever autant de Hg qu'il est nécessaire (32) et il en résulte une plus grande expansion et un plus grand écoulement plastique. L'emploi d'un condensateur automatique permet d'enlever une plus grande quantité de Hg des morceaux d'amalgame, avant de les insérer dans la cavité. Les chocs du condensateur rendent quand même la masse plastique et assurent une bonne union avec les couches suivantes. (33) L'écoulement plastique est de 50% plus faible que dans le cas où l'amalgame est condensé à la main, mais l'expansion reste normale. (34) C'est avantageux. Il n'est pas bon d'enlever trop de mercure de la masse entière de l'amalgame avant de commencer l'insertion. Un tel amalgame durcit plus vite (cristallisation) et, en le condensant, on brise les cristaux (35), ce qui peut causer la contraction et l'affaiblissement de l'amalgame.

Pour pouvoir bien condenser partout (dans les angles, le long des parois, etc), il faut avoir des fouloirs de différentes formes. La force de condensation dépend de la surface de la tête du fouloir et de la pression exercée avec lui. La même pression, avec un fouloir plus petit (surface de sa tête), donne une plus grande force de condensation que celle produite par un fouloir plus grand. (36) Seulement, le

petit fouloir, dans une grosse cavité, peut percer la masse d'amalgame, surtout au commencement de l'insertion. Son action se traduirait, non par l'expression de Hg, mais par le déplacement de la masse d'un point à un autre. Ce déplacement est moins possible dans une petite cavité. Le choix du fouloir est conditionné par l'accès de la cavité, par sa grandeur, par sa forme, etc., ayant pour but principal, toujours, l'expulsion du plus de Hg possible de toutes les parties de la masse d'amalgame. L'adaptation aux parois se fait en même temps.

Il faut encore ajouter que le polissage de l'amalgame peut créer une chaleur suffisante pour causer finalement la contraction de la masse. (37) Probablement, cette chaleur rompt-elle l'équilibre des réactions, plus ou moins établi en 24 heures, ce qui est beaucoup plus grave si le polissage est exécuté avant que les réactions soient stabilisées. Pour éviter de créer trop de chaleur en polissant, il faut maintenir le milieu de polissage frais, en employant le courant d'eau froide (38) si possible, ou, au moins en retirant souvent l'instrument à polir de la dent et en laissant suffisamment d'humidité tout autour.

Dans la description de la manipulation de l'amalgame en rapport avec ses changements volumétriques, on voit qu'il y a trois phases: malaxage, condensation et polissage. L'essentiel de la manipulation se trouve dans le malaxage et la condensation. Le polissage ne crée pas de changements volumétriques positifs. Dans notre cas, il est considéré comme étant réussi s'il a conservé l'état volumétrique de l'amalgame tel qu'il était avant l'opération.

Vu que l'état final de l'amalgame doit avoir de 3 à 13 microns par cm. d'expansion, on considère que si celle-ci est moindre, il y a contraction et si elle est plus grande, il y a expansion excessive (surexpansion). En résumé, *pour prévenir la contraction*, il faut:

- 1) éviter le surmalaxage,
- 2) faire l'insertion rapidement,
- 3) ne pas insérer l'amalgame sec,
- 4) éviter le surchauffage en polissant.

Le surmalaxage se produit si l'on

malaxe trop longtemps. 75 sec. suffisent en général lorsque le malaxage est fait à la main, et 8 à 15 sec. lorsqu'il est fait au moyen du malaxeur mécanique. Aussi, une pression trop forte et une fréquence exagérée de tours du pilon, peuvent causer le surmalaxage.

L'insertion rapide prévient la cristallisation de la masse d'amalgame, avant que la cavité soit remplie. Comme nous l'avons dit plus haut, en polissant, il faut maintenir le milieu frais autour de la dent, ainsi que les instruments de polissage.

Pour prévenir l'expansion excessive, il faut:

- 1) éviter le sous-malaxage (temps trop court de malaxage, amalgamation incomplète, la masse ne collant pas aux parois du mortier.);
- 2) enlever l'excès de Hg progressivement, au fur et à mesure que l'on avance dans l'insertion;
- 3) employer des fouloirs qui permettent la condensation dans tous les coins, sans déplacer la masse inutilement. Exercer la plus grande pression possible, suivant les circonstances, avec le fouloir, pour exprimer le plus possible de Hg. Avec une plus grande force de condensation, on diminue l'expansion mais on ne provoque jamais la contraction;
- 4) enlever l'excès de Hg exprimé par la condensation, en y en laissant très peu, pour assurer l'union avec les couches d'amalgame suivantes;
- 5) éviter la contamination de l'amalgame par l'humidité, pendant le malaxage et la condensation. Pour cela, il faut que la cavité soit asséchée, la dent maintenue à l'abri de la salive (digue, rouleaux de coton), éviter de toucher l'amalgame avec doigts, utiliser des instruments secs. De plus, le mortier, le pilon, l'alliage et le Hg doivent avoir la température de la chambre.

Pour éviter l'écoulement plastique exagéré, il faut éviter de laisser un excès de Hg dans l'amalgame. Avec une bonne condensation, l'excès de mercure s'enlève; mais l'emploi du condensateur automatique permet de diminuer l'écoulement plastique de 50% de plus que dans le cas où la condensation est faite avec le fouloir à la main.

Il est bon de rappeler que pour éviter

des erreurs de manipulation, il faut toujours lire les instructions des manufacturiers et les suivre fidèlement parce qu'ils connaissent mieux la nature de l'alliage et les moyens à prendre pour obtenir un amalgame de meilleure qualité.

Tests de laboratoire.

Pour nous rendre compte de l'influence réelle de la manipulation sur les changements volumétriques de l'amalgame, nous avons essayé de faire un petit nombre de tests de laboratoire. Les moyens que nous avons employés sont simples. Nous commencerons par les décrire.

Les moules utilisés pour l'insertion de l'amalgame sont des cylindres de verre de 4 mm de diamètre intérieur et d'à peu près 2 cm de longueur. Pour mesurer les changements linéaires, nous avons employé un micromètre dont la précision possible est de ± 2 microns. Le malaxage et la condensation ont été accomplis avec des instruments à main (mortier, pilons, fouloir), sauf dans les deux cas où nous avons utilisé le malaxeur mécanique.

Pour provoquer l'écoulement plastique de l'amalgame, comme nous le savons, il faut exercer sur lui une pression constante ou répétée. Conformément à l' "American Dental Association Specification No 1" (39), nous avons exercé une pression constante. Dans ce but, nous avons construit un appareil au moyen de deux tiges métalliques, l'une mobile et l'autre fixée sur un support, et de deux dynamomètres. Notre éprouvette d'amalgame a été placée en-dessous de la tige mobile, jointe aux deux dynamomètres. Ces deux derniers l'ont tirée vers le bas avec une force voulue et nous avons obtenu ainsi une pression pratiquement constante, exercée sur l'amalgame (effet d'écrasement), égale sensiblement à la somme des lectures sur les dynamomètres.

La préparation des éprouvettes pour les tests de changements volumétriques spontanés, diffère de celle pour l'écoulement plastique.

Dans le premier cas, l'amalgame doit dépasser légèrement les bouts du cylindre

de verre pour permettre de prendre des mesures au moyen du micromètre, sans toucher les bouts du cylindre. Les raisons pour lesquelles nous gardons l'amalgame dans le cylindre de verre sont les suivantes:

- 1) nous ne possédons pas de moules spéciaux pour les expériences en question;
- 2) les mesures doivent être prises après 15 minutes, à partir de la fin du malaxage; (40)
- 3) l'amalgame condensé dans le cylindre de 2 cm de longueur, adhère trop fortement à la paroi et il est impossible de l'enlever de son moule sans le briser parce qu'il n'est pas encore assez cristallisé (15 minutes);
- 4) le cylindre de verre peut représenter, dans une certaine mesure, la cavité de la dent: cela nous rapproche des conditions de la bouche.

Pour les tests sur l'écoulement plastique, les éprouvettes sont plus courtes. Le diamètre est le même (4mm). Elles doivent être libérées du cylindre de verre. Vu que la pression constante doit être appliquée sur elles après 3 heures, à partir de la fin de la condensation (41), l'amalgame ne se brise plus si l'on brise son moule.

Les figures nos 3, 4 et 5 représentent schématiquement: le micromètre utilisé, l'appareil pour les tests d'écoulement plastique et les deux sortes d'éprouvettes sus-mentionnées.

Afin d'augmenter la précision des mesures, nous avons pris les moyens suivants:

- 1) pour tous les tests, nous avons utilisé le même alliage "Aristoloy";
- 2) la température a été maintenue entre 20 et 25° C.;
- 3) les éprouvettes ont été placées dans le micromètre, autant que possible, de la même manière; (il faut une certaine pratique pour obtenir des résultats satisfaisants);
- 4) en prenant un grand nombre de mesures, nous avons calculé la moyenne arithmétique pour chaque éprouvette;
- 5) pour tous les tests sur les changements spontanés, nous avons préparé des éprouvettes à peu près deux fois plus longues que celles prescrites dans "I.A.D.A. Specification No. 1." Cela nous a permis d'enregistrer les changements qui sont proportion-

nellement plus grands (ce qui est facile à contrôler). Ensuite, nous avons calculé l'importance du changement par cm de longueur.

Les éprouvettes pour l'écoulement plastique avaient à peu près 8 à 10 mm de longueur. Nous ne les avons pas faites plus longues parce que la précision requise, comme nous le verrons plus bas, est moins grande.

Pour donner une idée plus nette de la méthode de travail employée, nous allons décrire brièvement un test sur les changements spontanés et un autre sur l'écoulement plastique.

Prenons un cas normal et essayons de constater, à notre manière, les *changements spontanés* de l'amalgame.

Avant tout, nous lisons "T.A.D.A. Specification No 1," déjà mentionnée (42)

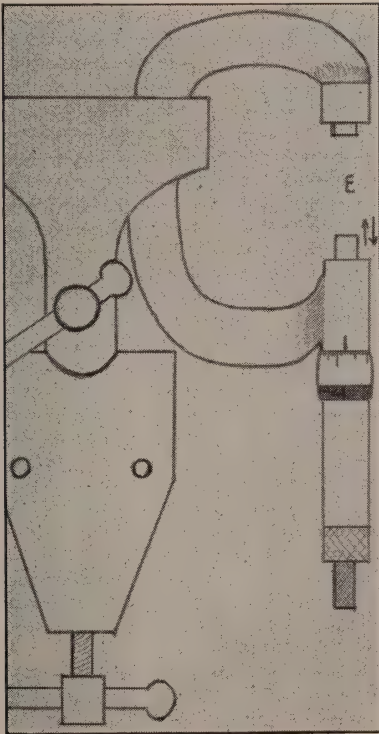


FIG. No 3

Micromètre fixé dans un étau pour faciliter la prise des mesures.

E = espace destiné à recevoir l'éprouvette.

et nous suivons la température de la chambre dans laquelle les tests sont faits (20-25° C.), le temps indiqué pour prendre les mesures (15 min. après la fin du malaxage et après 24 H.) et les changements permis pour un amalgame normal (3-13 μ /cm après 24 h.).

Devant nous, nous avons placé: un

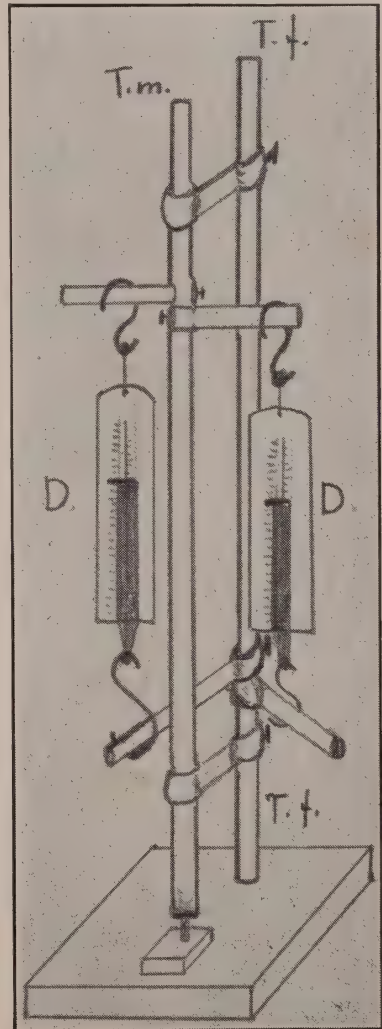


FIG. No 4

Appareil pour les tests sur l'écoulement plastique de l'amalgame

T.m. = tige mobile

T.f. = tige fixe

D = Dynamomètre

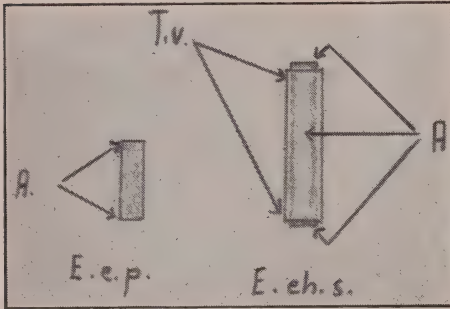


FIG. No 5

Epreuves

E.c.p. = Epreuve pour écoulement plastique

E.ch.s. = Epreuve pour changements spontanés

A = amalgame

T.v. = tube de verre

chronomètre, un thermomètre, le tube de verre, (moule) préparé d'avance, et tous les instruments nécessaires pour le malaxage, la condensation et les mesures. Tout est sec, propre et à la température de la chambre. Nous procédons au malaxage et à l'insertion de la même manière qu'en clinique, pour obtenir un bon amalgame. Dans ce cas-ci, l'insertion est plus facile à exécuter que dans la bouche. La condensation se fait avec un fouloir spécial qui entre facilement dans le cylindre de verre. Comme nous l'avons mentionné plus haut, l'amalgame de l'éprouvette dépasse légèrement les bouts du cylindre de verre. Nous mettons ensuite l'éprouvette dans le micromètre et l'amalgame, n'étant pas encore durci, s'aplatit par ses bouts. Nous obtenons ainsi des points de contact suffisamment nombreux entre l'amalgame et le micro-

Quinze min. après la fin du malaxage, nous mesurons la longueur de l'amalgame. Une ligne au crayon gras, tracée sur le micromètre et sur l'éprouvette, nous aide à maintenir la même position de cette dernière lorsque les mesures sont prises. Les mesures sont plus précises quand l'éprouvette se tient d'elle-même dans l'axe du micromètre. Au début, les lectures au micromètre varient trop brusquement parce que l'amalgame

s'adapte encore à celui-ci. Nous enregistrons les lectures lorsqu'elles commencent à se ressembler. Si, subitement, dans un grand nombre de lectures, l'une d'elles diffère de ses voisines de 5 à 10 microns, on admet que la position de l'éprouvette dans le micromètre n'est pas exacte et l'on ne tient pas compte d'une telle lecture. Avec une loupe, on distingue mieux les divisions du micromètre ainsi que les fractions d'une division.

Voici maintenant les lectures enregistrées sur l'éprouvette IV et les calculs qui ont été faits, les lectures se répétant à 2 microns près et la moyenne des lectures répétées devant être valable à $\pm$ un micron près.

Lectures au micromètre

Après 15 minutes		Après 24 heures	
1) 22.575	(22 mm 575 microns)	1) 22.587	
2) 22.575		2) 22.585	
3) 22.575		3) 22.585	
4) 22.577		4) 22.585	
5) 22.575		5) 22.587	
6) 22.575		6) 22.585	
7) 22.575		7) 22.587	
8) 22.575		8) 22.587	
9) 22.575		9) 22.587	
10) 22.573		10) 22.585	
11) 22.575		11) 22.587	
22.575	(22 mm 575 microns)	22.586	(22 mm 586 microns)
(moyenne arithmétique)		(moyenne arithmétique)	

Calculs.

$22.586 - 22.575 = 00.011 = + 11$ microns pour 2.25 cm de longueur (variation absolue après 24 h.)

$+ 11$ microns : 2.25 cm = $+ 4.9$ microns pour 1 cm de longueur (variation relative après 24 h.)

Comme nous le voyons, l'amalgame a subi, après 24 heures, une expansion de 4.9 microns par cm. L'expansion permise est de 3 à 13 microns par cm.

Le deuxième exemple qui va être décrit est un cas normal d'écoulement plastique (éprouvette II).

Le cylindre de verre (moule) est de 9 mm de longueur. Le malaxage et l'insertion imitent, autant que possible, ceux effectués habituellement dans la bouche. Mais dans ce cas-ci, la première couche d'amalgame riche en Hg est plus épaisse que celle insérée normalement

dans la dent. La condensation n'est pas trop forte.

Nous remplissons le moule de manière que l'amalgame soit de la même longueur que le cylindre de verre et nous laissons durcir environ 2 h. 30. Ensuite, nous libérons l'amalgame en brisant le cylindre: l'amalgame reste entier.

Vu que l'application d'une pression constante doit être faite sur les surfaces perpendiculaires à l'axe de l'éprouvette, nous utilisons un tour pour obtenir de telles surfaces (ce qui n'est pas facile à cause de la friabilité de l'amalgame). Nous obtenons ainsi un cylindre d'amalgame d'à peu près 8 mm de largeur, répondant à la spécification No 1 de l'A.D.A. (43) En prenant des précautions afin de ne pas en endommager les surfaces, et après avoir mesuré sa longueur, nous plaçons le cylindre d'amalgame en-dessous de la tige mobile de l'appareil susmentionné (fig. 4) Les deux dynamomètres se partagent de moitié la pression constante qu'ils exercent sur l'amalgame par l'intermédiaire de la tige. L'intensité de cette pression est calculée de la façon suivante; la spécification No 1 de l'A.D.A. dit que l'éprouvette d'amalgame doit subir 250 kg/cm² pendant 24 heures. Il nous faut donc d'abord trouver la surface (S) de notre amalgame, dont le diamètre (D) = 4 mm.

$$S = \pi r^2 :$$

$$\pi = 3.14$$

$$r = \frac{1}{2} \times D = \frac{1}{2} \times 4 \text{ mm} = 2 \text{ mm} = 0.2 \text{ cm}$$

$$r = 0.2 \text{ cm}$$

$$\text{Donc } S = 3.14 \times (0.2 \text{ cm})^2 = 3.14 \times 0.04 \text{ cm}^2 = 0.1256 \text{ cm}^2$$

$$\frac{S = 0.1256 \text{ cm}^2}{250 \text{ kg}}$$

$$- 1 \text{ cm}^2$$

$$\frac{X \text{ kg} - 0.1256 \text{ cm}^2}{1}$$

$$X = 250 \times 0.1256 \text{ kg} = 31.4 \text{ kg}$$

$$X = 31.4 \text{ kg}$$

Nous voyons que pour notre éprouvette, qui a une surface (S) = 0.1256 cm², correspond la pression (X) = 31.4 kg, qui va être exercée par les deux dynamomètres, par leur propre poids et par le poids de la tige mobile. Pratiquement,

nous mettons chacun des dynamomètres à 15 kg (ce donne 30 kg ensemble) et le reste, 1.4 kg, représente à peu près le poids de la tige mobile et le poids propre des deux dynamomètres.

Revenons plus au début de notre description pour mesurer la longueur de notre éprouvette II. Cette mesure se fait de la même manière que celle décrite précédemment, concernant l'expansion spontanée (éprouvette IV), sauf que les premières lectures sont faites après 3 heures à partir de la fin de la condensation.

Lectures au micromètre (éprouvette II).

Après 3 heures, nous avons pris cinq lectures dont la moyenne arithmétique est de 8.032 (8 mm 32 microns). Ensuite, nous appliquons la pression de 31.4 kg sus-mentionnée, pendant 24 heures, durant lesquelles nous contrôlons deux ou trois fois les dynamomètres, pour voir s'ils sont toujours à la pression de 15 kg. Après 24 heures, nous vérifions une fois de plus la pression des dynamomètres et nous les enlevons pour prendre les mesures. Les cinq lectures du micromètre nous ont donné la moyenne arithmétique de 7.729 (7mm 729 microns).

Calculs:

8.032	—	7.729	= 0.303 —	303 microns
(valeur absolue au début, après 3 heures)		(valeur absolue après 24 heures)		(variation absolue — négatif ou écrasement absolu après 24 heures)

Calculons maintenant la variation relative en % après 24 heures.

$$\text{Variation relative en \%} = \frac{100 \times \text{Variation absolue}}{\text{valeur absolue au début}} =$$

$$\frac{100 \times 303}{8032} = \frac{30300}{8032} \% = 3.7\%.$$

On voit que l'éprouvette II a subi un écrasement (dû à l'écoulement plastique) de 3.7% après 24 heures.

L'écrasement permis peut atteindre jusqu'à 4% après 24 heures, dans les conditions décrites. Agissant de la sorte, nous avons fait 10 tests sur l'expansion spontanée et 5 tests sur l'écoulement

plastique. Le résumé de ces petits essais figure aux tableaux 1 et 2 (voir plus loin). Nous allons décrire brièvement chacun des tests en question.

Tests sur l'expansion spontanée.

Test No 1 (Eprouvette IV)

Ce test est décrit dans les pages précédentes. Nous ajouterons ici l'explication de la manipulation normale enseignée, même si nous devons répéter certaines explications déjà données plus haut. Le malaxage est fait dans le mortier avec le pilon, tous deux bien dépolis et propres. Nous tenons le pilon avec trois doigts (à la façon d'un crayon) et exerçons une légère pression en faisant 10 à 12 tours par 5 secondes, jusqu'au moment où le mercure prend tout l'alliage et que la masse devient brillante, plastique et commence à adhérer aux parois du mortier. Ensuite, nous transportons la masse dans le doigt de caoutchouc ou sur un morceau de caoutchouc propre, sans jamais toucher avec les doigts la masse amalgamée. Nous triturons encore avec le pouce le contenu du caoutchouc, dans le creux de la paume de la main, pendant environ 30 secondes. Avant d'enlever la masse d'amalgame ainsi manipulée, du caoutchouc, nous la serrons entre le pouce et l'index pour en exprimer le trop grand excès de Hg (s'il y a lieu) et le projeter hors du caoutchouc. L'amalgame ainsi fait doit être plastique, se laissant facilement trancher en quelques morceaux. L'insertion enseignée se commence par la mise en place du premier morceau d'amalgame, tel qu'il est, dans le fond de la cavité—ici dans le fond du cylindre de verre, posé sur une plaque de verre propre. Cette première portion est condensée au moyen d'un fouloir droit spécial, de 2½ mm de diamètre (le diamètre int. du cyl. est de 4mm). Le Hg remonte à la surface en condensation d'où il est, en grande partie, enlevé. Nous continuons l'insertion avec d'autres morceaux, de plus en plus privés de Hg libre.

Enfin, le tiers supérieur du cylindre est rempli d'amalgame qui, au préalable,

a été enserré dans un morceau d'étoffe au moyen d'une pince, pour en exprimer le plus possible d'excès de Hg. L'insertion se fait en 3-4 minutes. La force de condensation est sûre, provoquant l'apparition de la surface brillante, même avec de l'amalgame privé de Hg libre par le moyen décrit ci-dessus. Cet excès de Hg, produit par la condensation, est cette fois encore en partie enlevé. Le moule ainsi rempli, avec un surplus, est renversé et nous ajoutons, à l'autre bout, un peu d'amalgame sec, de manière à en avoir un léger surplus aux deux bouts de l'éprouvette.

Les quelques variations (erreurs volontaires) apportées dans la manipulation, seront indiqués dans la description des tests concernés. Le restant de la manipulation sera considéré comme normal, c'est-à-dire comme dans celle décrite dans le test No 1. (Eprouvette IV).

Test No 2 (Eprouvette VI)

Le malaxage est fait—45 sec. dans le mortier et 30 sec. avec le doigt de caoutchouc — d'une manière normale. Le temps susdit a été observé rigoureusement. Insertion normale.

Test No 3 (Eprouvette VIII)

Le malaxage est fait de la façon suivante: 75 sec. dans le doigt de caoutchouc, dont 45 sec. de trituration entre le pouce et l'index et 30 sec. de moulage dans le creux de la paume de la main. Insertion normale.

Test No 4 (Eprouvette XV)

Le malaxage est fait au moyen du malaxeur mécanique. La masse d'amalgame apparaît très brillante, homogène et plastique. La condensation est très forte (plus forte que la normale).

Test No 5 (Eprouvette X)

Le malaxage est fait normalement, mais auparavant, le mortier a été rendu plus lisse en faisant environ 200 tours de pilon à vide et en laissant dans le fond un peu de vieil amalgame. Nous avons constaté que le résidu de vieil amalgame s'est réuni à la masse entière au début du malaxage (en contact avec le Hg). Insertion normale.

A Suivre

ÉDITORIAL

Encore la fluoruration

La fluoruration de l'eau a fait couler beaucoup d'encre depuis plusieurs années et le débat entre les partisans de cette mesure et ses adversaires n'est pas près de s'éteindre.

Pourtant la plupart des associations sérieuses et des organismes scientifiques du Canada et des États-Unis, qui s'occupent de près ou de loin des problèmes de santé publique, se sont prononcés en faveur de cette addition de fluorures à l'eau de consommation dans le but d'abaisser le taux de la carie dentaire. Nommons de mémoire les groupements officiels qui préconisent cette mesure, après avoir mené des enquêtes sérieuses à son sujet: Au Canada: l'Association dentaire canadienne, l'Association médicale canadienne, l'Association canadienne d'hygiène publique, Canadian Society of Dentistry for Children, The Dental Public Health Committee of the Ontario Dental Association, The Executive Council of the Toronto Academy of Dentistry, The Health League of Canada, The Ontario Public Health Association, Toronto Academy of Medicine. Aux États-Unis: American Association of Public Health Dentists, American Dental Association, American Hospital Association, American Medical Association, American Nurses' Association, American Society of Dentistry for Children, The Commission on Chronic Illness, National Research Council (U.S.A.), State and Territorial Dental Health Directors, State and Territorial Health Officers Association.

Malgré tous ces témoignages qu'on ne peut taxer de partiiaux et qui n'apportent rien aux associations, qui les ont donnés—bien au contraire—il se trouve encore des individus ou des soi-disant associations de citoyens qui tentent de discréditer la fluoruration de l'eau dans les régions où elle ne l'est pas naturellement.

Dans quel but essaie-t-on de diminuer la valeur de ce procédé? Serait-ce dans l'intention de se créer du capital politique? Trouverait-on dans cette question matière à tapage et à discussion oiseuse ou retrouverait-on dans cette polémique toutes les causes de celles qui ont entouré, il y a quelques vingt ans, la pasteurisation du lait et la vaccination: ignorance, réaction à un progrès moderne, vieux fonds de superstition en regard de thérapeutique nouvelle?

Peu importe les visées de ces détracteurs, ceux-ci, en s'adressant en termes simples à un public ignare des choses scientifiques, peuvent soulever des passions et nuire à l'accomplissement d'actes qui améliorent sûrement la santé de la population. L'homme de la rue est naturellement—et malheureusement—porté à écouter ceux qui parlent fort et qui se servent d'arguments populaires et sensationnels; il porte peu d'attention aux savants, qui s'expriment posément parce qu'ils s'appuient sur des expériences et des recherches accomplies dans le silence des laboratoires et des bibliothèques.

Il en est de même d'ailleurs dans les autres domaines de l'activité humaine. On applaudit et on croit les démagogues et les bouffons, qui s'adressent aux sentiments et aux passions: on fuit les gens sérieux, qui ont un message de l'intelligence à transmettre. Les uns n'exigent pas d'effort de leur audience: les autres demandent un certain travail intellectuel. Voilà toute la différence!

Un petit journal de Montréal, appelé *L'Unité Nationale*, publiait en page 8 de sa livraison de juin 1954 une diatribe contre la fluoruration de l'eau de Montréal.

Pour l'édification des membres de langue française de l'Association dentaire canadienne, l'article apparaît ci-bas avec des commentaires que nous lui ajoutons en caractères différents; et nous laissons à des personnes qualifiées en matière de fluoruration le soin de rétablir les faits cités dans cet article étrange.

Du poison à rat dans l'aqueduc?

On propose de le servir dans les eaux potables de Montréal. — L'expérience des autres municipalités américaines. — Comment payer 2,000 fois moins cher pour le même résultat. — En Russie, on se sert du même fluorure de sodium pour "décrasser les cerveaux". — Formidable racket sur les sous-produits du trust mondial de l'aluminium. — Pour une consommation préventive des dents à 00.5% du volume total, détruira-t-on les cellules nerveuses des adultes? — Journaux, revues et experts dénoncent un grand danger.

Détruire la résistance et la volonté.

Il est question de traiter l'eau de l'aqueduc de Montréal au fluorure de sodium. Et la discussion sur la fluoruration des eaux potables est rendue chez-nous. Aux Etats-Unis, cette discussion fait rage depuis plus de 8 ans.

Le fluorure de sodium est un sous-produit de l'industrie de l'aluminium, qui forme l'un des plus grands trusts internationaux au monde. Le sous-produit (fluorure) est disponible en quantités colossales. On s'en sert généralement pour fabriquer le poison à rat et le poison destructeur des épidémies de fourmis. Le premier et plus grand protagoniste de l'emploi du fluorure de sodium dans les eaux potables des aqueducs municipaux a été et est encore M. Oscar Ewing, qui faisait partie du bureau légal Hubbard, Hill & Ewing, avocats de l'Aluminium Co. of America, maison-mère du grand trust mondial de l'aluminium.

Si le problème de la fluoruration des eaux potables est nouveau pour nous Canadiens, il ne l'est pas pour les Américains. M. Ewing, ci-haut mentionné, a été sous le régime Truman le dictateur virtuel de l'United States Public Health Service, avec 36,000 bureaucrates (nécessairement propagandistes) sous sa domination et un budget annuel de deux milliards de dollars à sa disposition pour l'expansion de son programme et ses idées, dont la principale était la fluoruration obligatoire des eaux potables comme "médecine préventive" contre la carie des dents des enfants. Cette médecine préventive pouvait ainsi permettre au trust de l'aluminium de se débarrasser très lucrativement de ses énormes stocks de déchets appelés fluorure de sodium.

Une très forte bibliographie sur la fluoruration des eaux potables existe aujourd'hui, aux Etats-Unis. Depuis 1946, des centaines de volumes, brochures, articles de magazines et journaux ont été publiés. Il y a même quatre publications régulières qui ne s'occupent exclusivement que de ce problème. Il y aurait à citer des centaines de noms de savants,

chimistes, médecins, dentistes, pathologistes, sénateurs, et congressmen américains, qui tous dénoncent violemment la fluoruration comme un danger public d'extrême importance. S'il y a lieu, nous en donnerons plus tard d'intéressants détails. Pour le présent, nous nous contenterons des grandes lignes. Il y aura aussi lieu de nommer les publications et organisations gauchistes, directement inspirées de Russie Soviétique, qui ne cessent de faire leur propagande et leur agitation en faveur de la fluoruration. Voici donc, très succinctement, ce qu'on peut dire en ce moment sur cette question.

1. On recommande la fluoruration des eaux potables dans le but d'empêcher la carie des dents chez les enfants de deux à seize ans.

Incomplet—on devrait ajouter "des adultes de l'avenir, qui, enfants, auront consommé une eau fluorurée". Et pourquoi "seize ans", puisque les dernières dents temporaires tombent vers onze ou douze ans?

2. La fluoruration sauverait, pour les enfants de 2 à 16 ans, les dents de lait pour 50% de sa valeur positive, c'est-à-dire des dents qui, cariées ou non, doivent tomber quand même.

Argument qui dénote une ignorance totale de la question! L'addition des fluorures a pour but non seulement de protéger les dents temporaires, mais aussi les dents permanentes.

3. La fluoruration des eaux potables, d'après les experts qui la favorisent, préviendrait la carie des dents infantiles dans 40% des cas. La plus complète expérience poursuivie sur la conservation des dents, par la faculté dentaire de la Northwestern University des Etats-Unis, a prouvé qu'une plus grande proportion peut-être obtenue (50% à 60%) en propageant le brossage des dents des enfants après chaque repas.

Argument enfantin! En face d'un problème aussi complexe que celui de la carie dentaire, il vaut mieux, pour sa solution, employer deux formules plutôt qu'une seule. On pourrait aussi bien dire "négligez l'alimentation des enfants, puisque le brossage après les repas, diminue la fréquence de la carie dentaire dans une proportion de 50% à 60%."

4. Quand on calcule la proportion d'eau potable absorbée par les enfants de 2 à 16 ans, on estime qu'ils ne consomment que 00.5% de toute l'eau fournie aux populations par les aqueducs municipaux (compte tenu de l'eau qu'il faut soustraire pour les incendies, l'arrosage des rues, les grandes industries, les buanderies, les manufactures de liqueurs douces, départements de lavage, garages, arrosage des jardins, eau consommée pour les lavages domestiques, lavages de planchers, ablutions,

douches, bains cuisines, etc. etc.). Ainsi pour aider les dents (50% dents de lait) des enfants, il faut empoisonner l'eau employée ailleurs dans une proportion de 99½%.

Sans nous occuper des termes utilisés dans ce paragraphe, notons encore ici qu'il s'agit de préserver non seulement les dents de lait, mais aussi les dents permanentes.

5. La fluoruration n'a rien de commun avec la chloruration de l'eau potable. Le chlorure se dilue dans l'eau; le fluorure de sodium industriel ne se dissout pas dans l'eau mais pénètre tel quel dans le corps humain. Ainsi, il faut "fluoriser" les adultes dans une énorme proportion pour sauver (40%) la moitié des dents des enfants en-dessous de 16 ans.

Même remarque que plus haut.

6. Chez les adultes, les expériences de clinique et laboratoires ont prouvé que le fluorure de sodium a pour effet de ralentir les réflexes nerveux, réduire la résistance de la volonté et la force de caractère, abêtir l'intelligence. Les expériences faites sur les rats, les cobayes et les singes ont démontré une énorme réduction du fonctionnement du cerveau.

Des études médicales entreprises par des scientifiques sérieux montrent que le fluorure de sodium ne cause aucun tort à la santé des individus qui le consomment en quantité dosée. Depuis toujours, les habitants de certaines régions boivent une eau qui contient naturellement des fluorures et ne s'en portent pas plus mal, ni psychiquement ni physiquement!

7. Une erreur dans le dosage du fluorure de sodium dans les aqueducs peut produire des effets désastreux sur toute la population.

D'accord et c'est pourquoi les protagonistes de la fluoruration recommandent aussi l'emploi de dispensateurs mécaniques contrôlés par des ingénieurs expérimentés, comme on procède dans le cas du chlore.

8. Au lieu de fluoriser l'eau à 100% du volume débité par les aqueducs afin de rendre efficace seulement 00.5% du volume consommé, il coûterait deux mille fois moins cher aux municipalités de distribuer gratuitement le fluorure de sodium aux familles, dans la proportion exacte requise par le nombre d'enfants qui doivent l'employer. Mais les médecins de famille ne le permettaient pas, à cause du danger que comporte ce poison à rat. De plus, les grands trusts feraient énormément moins d'argent.

Voilà pourquoi, le mélange doit être effectué d'une manière scientifique à la source même de la distribution de l'eau.

9. De nombreux médecins et dentistes américains dénoncent la fluoruration de l'eau comme une mesure de "médication massive des foules", c'est-à-dire l'imposition forcée d'une drogue dangereuse aux citoyens par des pouvoirs publics sans le consentement des "médicamentés" et de leurs médecins.

Comme on a autrefois décrié la vaccination obligatoire, la pasteurisation du lait, etc.

10. La fluoruration de l'eau potable est un item du grand programme de "Médecine socialisée", proposé par M. Oscar Ewing, cité plus haut, en 1949.

M. Ewing a laissé la scène publique, dans le domaine de la santé, en même temps que M. Truman.

11. Les villes américaines auxquelles on avait imposé la fluoruration des eaux potables (souvent à l'insu de leurs conseils municipaux) depuis 7 ans, abandonnent rapidement cette innovation après en avoir subi les mauvais résultats, telles, Delavan, Stevens Point, Plymouth, Shewane, Park Falls, Manitowoc, Veroqua, Dennimore, Burlington, Waterford, LaCrosse et Westby dans l'état du Wisconsin. Milwaukee est en révolte présentement pour s'en débarrasser. Même chose dans le Michigan à Flint, Détroit, Iron Mountain, Lansing, dans l'état de New-York à Jamestown, Hamburg, Syracuse, Levittown, Falconer, Ithaca, Smithtown, Clinton, Peekskill, Glen Cove. La ville de New York a refusé de s'y soumettre. Dans l'état du Massachusetts un bill est proposé pour interdire l'empoisonnement des eaux au fluorure sur tout le territoire. Northampton a cessé la fluoruration après 34 mois d'usage trouvé funeste Cambridge a voté contre le 3 nov. 1953 suivant l'exemple de Needham, Manchester, Ayer, Williamstown, Amesbury, Holyoke, Springfield, North Adams, New Bedford, Pittsfield, North Andover, Lee, Worcester (déclarée illégale en cet endroit). A Hudson les citoyens veulent faire annuler une approbation précédente.

Voilà un paragraphe important si les faits qu'il énumère sont vrais. Il serait bon que le service de santé de la cité de Montréal entreprenne une enquête dans chacune de ces villes, en écrivant à leur service de santé pour demander si l'allégation est véridique et en connaître les détails.

12. Les publications qui font la propagande pour la médecine socialisée sont toutes unanimes à prêcher la fluoruration, de même que les publications communistes, socialistes et radicales.

Il est normal que les publications qui propagent l'idée de l'étatisation de la médecine préconisent la fluoruration de l'eau, puisque cette mesure diminuerait le taux de la carie dentaire dans une proportion de 40%.

13. La fluoruration des eaux n'a aucune origine dans le monde savant, médical ou dentaire. Elle fut proposée d'abord par de petits groupes politiques comprenant les plus ardents apôtres de la médecine socialisée sur ce continent.

Faux—la première personne qui s'intéressa au problème fut un dentiste, qui par ses constatations déclancha par la suite, une série d'enquêtes et de recherches.

14. "Emparez-vous des agences de santé publique et vous aurez la clé de voûte dans

l'arc de l'état socialisé", Lénine, fondateur de l'Union Soviétique.

15. Dans ses mémoires publiés récemment, la princesse Ileana de Roumanie (soeur du feu roi Carol) rapporte une conversation avec la juive Anna Pauker, dictatrice communiste de Roumanie.

Ileana: "Mais comment pouvez-vous conquérir au communisme un continent comme l'Amérique du Nord?"

Anna Pauker: "Ce sera très facile, par le contrôle des utilités publiques et DES EAUX POTABLES".

16. Dans le "Constitution Guide Post" d'oct.-nov. 1953, on peut lire: "Le fluorure de sodium dans l'eau potable pour permettre à n'importe quel gouvernement d'imposer son contrôle. Un seul tour de valve suffit".

17. Dans "Fluoridation Unmasked", Fanchon Battelle cite Rena-M. Vale, ancien membre du Parti Communiste Américain, qui déclare: "Dans les cercles communistes, on reconnaît que la fluoruration de l'eau potable est un instrument de la lutte Rouge, à être

utilisé pour l'empoisonnement direct des populations ou la réduction de leur résistance à une domination communiste;... le fluorure de sodium affecte les cellules du cerveau et des nerfs à un tel point que l'initiative disparaît et la personnalité devient docile, servile".

W. D. Herrstrom, de Faribault, Minn. écrit dans son "Americanism Bulletin" qu'en Russie, on fait boire aux prisonniers de l'eau fluoridée afin de les abêtir et détruire leur résistance morale. Serait-ce ce qu'on appelle en Russie le "brain washing" ou décrassage du cerveau?

Avant de commencer à servir du poison à rat dans l'eau potable de Montréal, les autorités feraient mieux de se renseigner auprès des villes qui en ont déjà fait l'essai, auprès des nombreux chimistes, médecins et dentistes qui se sont prononcés contre l'emploi de ce poison.

On agile encore ici l'épouvantail communiste! Ecran commode, abri de tout repos! Surtout quand Anna Pauker, dont il est fait mention ici, est disparue du nombre des dirigeants communistes de Roumanie depuis quelques années.

En conclusion soulignons que l'article de l'Unité Nationale ne contredit pas l'effet bien-faisant du fluorure de sodium dans l'élaboration des tissus dentaires.

GERARD DE MONTIGNY

La gomme à mâcher

Nonobstant le dégoût que suscite la gomme à mâcher des soldats et des touristes américains chez les Allemands, l'Association médicale allemande vient de décider que malgré l'effet nocif du sucre qui la recouvre ou qui s'y incorpore, "la gomme à mâcher active le flot salivaire et aide au nettoyage mécanique des dents. De plus, elle fait travailler les dents à une époque où les gens dédaignent les aliments durs ou les mastiquent à moitié."

Le gynécologue-accoucheur et la carie dentaire

Rebel a insisté sur le fait que le problème de la prophylaxie des caries ne serait résolu que si on pouvait agir au cours de la vie foetale intra-utérine.

De la compilation de diverses études et d'expériences personnelles, Schmidt (Münch, med. Wschr., 12 mars 1954) conclut que le fluor ajouté à l'eau de boisson consommée par la femme enceinte passe dans la circulation sanguine et atteint le fœtus dans le sang duquel il se trouve à des taux très élevés, sans toutefois, semble-t-il, nuire au développement foetal.

Il semble donc que ce soit là un argument supplémentaire pour préconiser la fluoruration de l'eau.

Journal

OF THE CANADIAN DENTAL ASSOCIATION

Brantford fluoridation caries study - 1954 report

by *H. K. BROWN, D.D.S., D.D.P.H., *H. R. McLAREN, D.D.S., D.D.P.H., **BARBARA STEWART, B.A.

PURPOSE OF THE STUDY

The Brantford Fluoridation Caries Study was undertaken with a view to finding out whether or not the raising of the fluoride content of a previously fluoride-free water supply to 1 part per million, by the mechanical addition of sodium fluoride, would reduce the incidence of dental caries to that which obtains where water supplies derive about 1 part per million of fluoride from deposits in the earth. Studies in various parts of the world (2), and later confirmed by our findings at Stratford, Ontario (3), had shown that where there is water-borne fluoride from underground deposits in a concentration of about 1 part per million, caries incidence was about 65 per cent lower than in places having

fluoride-free water supplies, without any accompanying detectable ill effects.

HISTORY OF THE STUDY

Brantford instituted mechanical water fluoridation in 1945. Following discussions by its health authorities with the Faculty of Dentistry, University of Toronto, and with the Associate Committee on Dental Research, National Research Council of Canada, this department was requested to undertake a controlled study of the dental effects of fluoridation on Brantford children.

With the assistance of the Dental Division, Ontario Department of Health, planning and organization of the Brantford Fluoridation Caries Study was done by the Research Division and the Dental Health Division of the Department of National Health and Welfare, in 1947. Sarnia and Stratford, two cities in Western Ontario known to be comparable to Brantford, except for the fluoride content of their water supplies, agreed to serve as controls.

Field studies began in 1948, and have been reported upon previously (4), (5),

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(6). This report discusses findings obtained in Stratford during November 1953, and in Brantford and Sarnia during the first quarter of 1954. These data have been analyzed in comparison with those obtained in 1948, 1951 and 1953.

SELECTION OF CHILDREN FOR EXAMINATION

The study compares a group of children (Brantford) who have used a mechanically fluoridated water supply continuously since June 1945, and who before that date did not use fluoridated water, with a group (Sarnia) who continuously since birth have not used fluoridated water, and a second group (Stratford) who have used continuously since birth water fluoridated from underground deposits of fluoride. Eligibility on this point is defined as including periods of absence of six weeks or less. Residence eligibility is determined from information supplied by the parents. Secondary schools, as well as primary schools, are canvassed for eligibles.

On the basis of data concerning the ordinary incidence of dental caries, it was decided to examine at least 500 children in each group, 6-8, 9-11, 12-14. Since eligible children in Brantford totalled over 2,500, sampling was indicated there and was carried out systematically by school and grade, beginning with a random start for each age group in the manner described in "A Suggested Methodology for Fluoridation Surveys in Canada" (7). Although the lower incidence of caries found in Stratford, and by 1951 in Brantford, indicated that a smaller sample size could be used, the total of at least 500 has been maintained where possible. No sampling was carried out in Sarnia in 1953, although for one age group (6-8) the total of eligibles might have been considered to indicate sampling; this age group was sampled in the 1954 Sarnia survey.

The totals of eligible children and of those examined are shown for each city by age group in Table 1 for 1948, 1951, 1953 and 1954. The totals chosen for examination by sampling are also given.

METHOD OF EXAMINING AND RECORDING

All examinations of the study have been conducted by the same examiner (H.K.B.), using a portable dental examining light of specific intensity kept at a constant distance, plane mouth mirrors and No. 5 Clev-dent explorers. The lowest limit in size for a caries lesion was defined as one in which the point of the explorer would stick and resist direct withdrawal, or in which softness was palpable. Hard enamel surfaces and enamel imperfections were not recorded as caries. Interproximal roughnesses capable of holding the explorer point were recorded as caries. Oral hygiene was also recorded as "good", "fair", "poor". All observable mottling of enamel was recorded.

A diagrammatic type of chart depicting both permanent and deciduous teeth was used for recording. Although, for purposes of this report, data are presented only for DMF (decayed + missing + filled) permanent teeth and df (decayed + filled) deciduous teeth, tooth decay was recorded in the detail necessary for analysis by number of surfaces affected. In addition, every tooth space was accounted for in order that later investigation might be made of a DMF tooth index of all erupted teeth per child.

FINDINGS

The hypothesis that a concentration of about 1 part per million of fluoride in the drinking water, mechanically added, inhibits the development of dental caries in the teeth of the users of the water, at least to the end of the fourteenth year of life, is further substantiated by the 1954 survey findings. There has been a decrease from survey to survey (1948-51-53-54) in the extent of caries at Brantford where fluoridation of the public water supply was begun in June 1945.

As this study does not include a pre-fluoridation survey, the full benefit which the teeth of Brantford children have received since fluoridation cannot be evaluated directly. However, an indication of

TABLE 1
TOTAL CHILDREN ELIGIBLE AND TOTAL EXAMINED, BY AGE GROUP
Brantford, Sarnia and Stratford, 1948, 1951, 1953 and 1954

Year	Total Eligible				No. Chosen for Examination				No. Examined			
	Age	Age	Age	Age	Age	Age	Age	Age	Age	Age	Age	Age
	6-8	9-11	12-14	Total	6-8	9-11	12-14	Total	6-8	9-11	12-14	Total
1948	963	816	747	2,526	624	602	600	1,826	619	595	593	1,807
1951	1,053	803	756	2,612	607	592	604	1,803	579	578	585	1,742
1953	Not Available				536	551	521	1,608	526	548	518	1,592
1954	1,288	901	776	2,965	512	515	515	1,542	490	502	490	1,482
Sarnia* (population 1951, 34,697)												
1948	677	580	495	1,752	-	-**	-	-	669	571	486	1,726
1951	720	634	514	1,868	-	-	-	-	691	619	506	1,816
1953	840	699	553	2,092	-	-	-	-	807	674	539	2,020
1954	847	599	597	2,043	564	-	-	1,760	553	580	547	1,680
Stratford (population 1951, 18,785)												
1948	511	434	376	1,321	-	-	-	-	505	432	371	1,308
1951	508	471	405	1,384	-	-	-	-	497	456	395	1,348
1954	685	493	390	1,568	-	-	-	-	662	486	383	1,531

* The population of Sarnia has increased rapidly in recent years. According to the 1941 Census the population was 18,734, and by municipal estimate it was 23,841 in 1949. For all three surveys, the children of nearby Point Edward which is served by the Sarnia water system, and which had a population of 1,838 in 1951, were included in the Sarnia survey. However, other outlying areas which were annexed by the city of Sarnia in 1953 were not included in the 1953 or 1954 surveys.

** Indicates that no sampling took place.

Note: The last survey in Stratford was conducted much closer to the end of the year than previously; the November 1953 data for Stratford are therefore termed "1954" in the new comparisons.

this can be obtained by comparisons with the findings for Sarnia children (fluoride-free controls). By 1948, Brantford data were not greatly different from those of Sarnia. Since that time, Brantford has shown successive increases in the percentage of caries-free children, and decreases in DMF teeth for all age groups studied. Tooth mortality has also decreased in Brantford (in all age groups under study). By 1954, the proportion of Brantford children 6-8 years with caries-free permanent teeth was about twice as great as for Sarnia, and the mean DMF tooth rate per child age 6-8 in Brantford was less than one quarter of the Sarnia rate for that age group. The benefit received by the 9-11 and the 12-14 age groups was also considerable by 1954, but because in these upper age groups, an appreciable proportion of the enamel had been formed before fluoride was added to the water, there was less scope for improvement.

The Stratford data are presented in the following tables for the purpose of indicating the degree of caries reduction which the Brantford children might be expected to attain after sufficient time had elapsed for those born since the beginning of fluoridation (June 1945) to produce a full set of permanent teeth. This requires a period of about 12 years from the time of birth. As yet only the teeth of the Brantford 6-8 age group may be compared with those of the corresponding Stratford age group with any reasonable expectation of finding an equal degree of caries resistance.

In the sections following, detailed analysis is given of the results of all surveys of the study to date. Data are presented for (1) all permanent teeth, (2) first permanent (six-year) molars, (3) permanent upper incisors and (4) deciduous teeth. Statistics are given separately for first permanent molars since these are the permanent teeth which first reach the stage of having been fully calcified during the period of fluoridation (6-8 age group, 1953-54). In the case of the upper

permanent incisors, the opportunity is afforded of observing the topical effect on enamel which had been formed and calcified before the institution of fluoridation. Except for upper incisors and deciduous teeth, data are presented for each of the three age groups, 6-8, 9-11, 12-14, which were chosen because of their relation to the tooth eruption pattern.

The indices used in this report to measure the extent of caries are (a) percentage of children having caries-free teeth, (b) tooth mortality rate (calculated only for all permanent teeth), and (c) mean DMF permanent teeth (for deciduous, mean df teeth). These indices and their standard errors are presented in turn for each type of tooth mentioned above.

PERCENTAGE OF CHILDREN HAVING CARIES-FREE PERMANENT TEETH

In a group of children, any factor bringing about a decrease in the number of teeth affected by caries will tend to also bring about an increase in the number of caries-free children in this group (8). Table 2, and Fig. I, show that, since the first survey in 1948, a significant increase* has been occurring in the proportion of Brantford children who have caries-free permanent teeth. These data also show a highly significant improvement, in all age groups, in Brantford children as compared with Sarnia children. As might be expected, however, the Stratford (1954) findings continue to show a higher percentage of caries-free

* The standard error is a measure of the variation which is associated with the sampling process. The difference between two index values is said to be statistically significant when the probability of it arising from chance or sampling variation, i.e., rather than from some specific factor such as fluoridation, is below some agreed value. The agreed levels of statistical significance are arbitrary but are generally assumed to be the two standard error and three standard error levels. The probability of obtaining, by chance, a difference of the magnitude of two standard errors between two observed values is about 0.0455 or just below 5 per cent. The odds against such a difference occurring are, therefore, about 21 to 1. For the three standard error levels, the probability is less than one per cent (0.27 per cent) and the odds are 369 to 1 against this occurrence by chance. When differences of these magnitudes are found, particularly those as great as three standard errors, we may feel quite confident in discussing them in terms of our hypothesis.

TABLE 2
PERCENTAGE OF CHILDREN HAVING CARIES-FREE PERMANENT TEETH

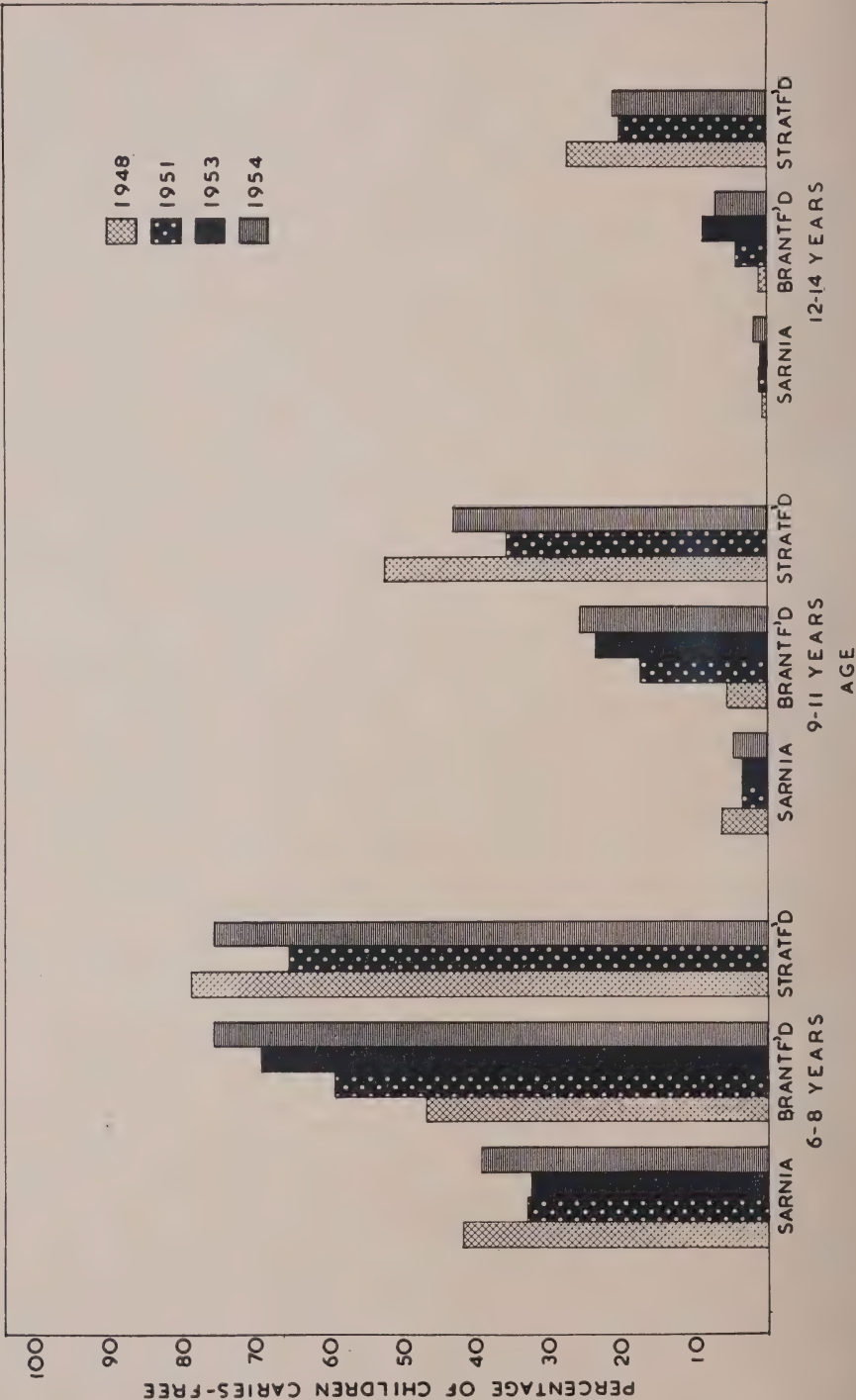
Age Group	Year	Percentage of Children Having Caries-Free Permanent Teeth and Standard Error of Percentage					
		Sarnia	Brantford	Stratford			
6- 8	1948	40.96 $\pm$ 1.901	46.69 $\pm$ 2.005	78.42 $\pm$ 1.831			
	1951	32.71 $\pm$ 1.785	59.24 $\pm$ 2.043	65.19 $\pm$ 2.136			
	1953	32.09 $\pm$ 1.644	69.20 $\pm$ 2.013	...			
	1954	39.06 $\pm$ 2.075	75.92 $\pm$ 1.932	75.83 $\pm$ 1.664 *			
9-11	1948	6.13 $\pm$ 1.001	5.71 $\pm$ 0.950	52.08 $\pm$ 2.404			
	1951	3.55 $\pm$ 0.749	17.13 $\pm$ 1.566	35.75 $\pm$ 2.244			
	1953	3.56 $\pm$ 0.718	23.36 $\pm$ 1.809	...			
	1954	4.48 $\pm$ 0.859	25.70 $\pm$ 1.950	42.80 $\pm$ 2.244 *			
12-14	1948	0.62 $\pm$ 0.350	1.18 $\pm$ 0.447	27.22 $\pm$ 2.310			
	1951	1.19 $\pm$ 0.484	4.27 $\pm$ 0.839	22.03 $\pm$ 2.084			
	1953	1.11 $\pm$ 0.449	8.69 $\pm$ 1.238	...			
	1954	2.01 $\pm$ 0.600	7.14 $\pm$ 1.164	23.24 $\pm$ 2.158 *			
Differences in Percentage of Children Having Caries-Free Permanent Teeth							
Age Group	Year	Inter-City		Inter-Year			
		Sarnia-Brantford	Brantford-Stratford	Years	Sarnia	Brantford	Stratford
6- 8	1948	5.73 S	31.73 SS	1948-51	-8.25 SS	12.55 SS	-13.23 SS
	1951	26.53 SS	5.95 S	1951-53	-0.62 NS	9.96 SS	) 10.64 SS
	1953	37.11 SS	...	1953-54	6.97 S	6.72 S	
	1954	36.86 SS	-0.09 NS	1948-54	-1.90 NS	29.23 SS	-2.59 NS
9-11	1948	-0.42 NS	46.37 SS	1948-51	-2.58 S	11.42 SS	-16.33 SS
	1951	13.58 SS	18.62 SS	1951-53	0.01 NS	6.23 S	) 7.05 S
	1953	19.80 SS	...	1953-54	0.92 NS	2.34 NS	
	1954	21.22 SS	17.10 SS	1948-54	-1.65 NS	19.99 SS	-9.28 S
12-14	1948	0.56 NS	26.04 SS	1948-51	0.57 NS	3.09 SS	-5.19 NS
	1951	3.08 SS	17.76 SS	1951-53	-0.08 NS	4.42 S	) 1.21 NS
	1953	7.58 SS	...	1953-54	0.90 NS	-1.55 NS	
	1954	5.13 SS	16.10 SS	1948-54	1.39 S	5.96 SS	-3.98 NS

S Statistically significant at two standard error level; ,
 SS Statistically significant at three standard error level;
 NS Not statistically significant (p greater than 5%).
 Decrease indicated by minus sign.

* November 1953; considered as "1954" for comparison purposes.

Standard errors shown have not been adjusted for finite population correction and are therefore overstated. Where no sampling was done in Sarnia and Stratford, the sampling error is, of course, zero; but the standard errors shown are used in the comparison of pairs of averages.

FIG. I
CHILDREN WITH CARIES-FREE PERMANENT TEETH
SARNIA, BRANTFORD & STRATFORD, 1948-1954



children than were found in Brantford, except for children aged 6-8 years. By 1954, the percentage of caries-free Brantford children in this age group had continued to increase, to the point where it is now of the same order as that exhibited in Stratford children aged 6-8 years.

However, the variation in percentage of children caries-free for all permanent teeth which has occurred between successive surveys for both Sarnia and Stratford, should be kept in mind when studying the data, since some of these inter-year differences can not be attributed to sampling.

The 6-8 age group in Brantford (1954) is the only one as yet whose permanent tooth eruption pattern has developed far enough since the beginning of fluoridation to permit a comparison of caries experience with that of the corresponding age group in Stratford on a basis of equality in relation to enamel fully calcified while fluoridated water was being used. All observable permanent tooth enamel of each of these two groups was calcified under the influence of fluoridated water, the one with well-water fluoride from underground deposits and the other from fluoride mechanically added to the water. As this particular group of Brantford children, born since 1945, become older and more of their permanent teeth erupt, further comparisons on this basis with Stratford in relation to the rest of the permanent dentition will become possible.

TOOTH MORTALITY

The extent of permanent tooth mortality is measured by the number, per 100 children, of permanent teeth extracted or still in the mouth but too badly broken down and infected to be saved by ordinary treatment. Both preventive and treatment measures may have a decided effect on tooth mortality rates.

In Table 3, mean tooth mortality per 100 children is shown for the Brantford-Sarnia-Stratford surveys to date. Although in almost all cases there has been

a decrease in tooth mortality in Brantford between successive surveys, these decreases are not all significant. Further, even by the time of the first survey, mean tooth mortality in Brantford was much lower than in Sarnia, for all age groups.

In all surveys, Brantford has consistently had a higher tooth mortality than Stratford for the two older age groups, but the rates for the 6-8 age group have approximated the Stratford level. The Stratford tooth mortality for both the 9-11 and 12-14 groups has remained fairly constant while in Brantford, for both of these age groups, there has been a steady reduction toward the Stratford figures. However, it should be borne in mind that differences in treatment measures affect tooth mortality figures.

MEAN DMF PERMANENT TEETH

Findings concerning dental caries experience in Brantford, and in the control cities, during the period 1948-1954, are presented in Table 4 and Fig. II. Essentially the same picture is revealed as was shown by the data relating to caries-free children: dental caries, in Brantford children, has been reduced markedly in all age groups under study. Since 1948, this decrease has amounted to 69% in the 6-8 age group, 44% in the 9-11 age group, and 36% in the case of children aged 12-14 years. In Sarnia and in Stratford, on the other hand, dental caries experience has remained either at about the 1948 levels, or has increased slightly, in all age groups studied.

Comparison of the Brantford and Sarnia findings shows that as early as 1951 dental caries experience in Brantford children was less than that found in Sarnia children. This improvement, which is highly significant, has continued from year to year since then. In 1948, Brantford children were found to have significantly more dental caries than Stratford children, age for age. By 1953, mean DMF tooth rates of Brantford children aged 6-8 years had decreased to a point within the range of the rates exhibited by Stratford children of the same age.

TABLE 3

MEAN TOOTH MORTALITY (MISSING AND IRREPARABLE) PERMANENT TEETH
PER 100 CHILDREN

Age Group	Year	Mean Tooth Mortality (Missing and Irreparable Permanent Teeth) Per 100 Children and Standard Error of Mean					
		Sarnia		Brantford		Stratford	
6-8	1948	7.03 $\pm$ 1.367		1.62 $\pm$ 0.641		0.99 $\pm$ 0.441	
	1951	10.42 $\pm$ 1.682		1.21 $\pm$ 0.516		1.41 $\pm$ 0.602	
	1953	8.05 $\pm$ 1.455		2.09 $\pm$ 0.731		...	...
	1954	5.97 $\pm$ 1.480		1.43 $\pm$ 0.674		1.66 $\pm$ 1.839 *	
9-11	1948	51.31 $\pm$ 4.348		28.91 $\pm$ 3.016		5.09 $\pm$ 1.445	
	1951	52.02 $\pm$ 3.953		23.01 $\pm$ 2.522		4.82 $\pm$ 1.367	
	1953	47.33 $\pm$ 4.097		14.23 $\pm$ 2.059		...	...
	1954	49.83 $\pm$ 3.973		13.94 $\pm$ 2.291		8.02 $\pm$ 1.510 *	
12-14	1948	137.24 $\pm$ 7.985		84.32 $\pm$ 5.602		18.87 $\pm$ 2.911	
	1951	125.30 $\pm$ 8.473		62.56 $\pm$ 4.592		20.76 $\pm$ 3.496	
	1953	132.10 $\pm$ 8.820		47.30 $\pm$ 4.667		...	...
	1954	110.60 $\pm$ 7.221		44.49 $\pm$ 3.963		22.72 $\pm$ 3.553 *	
Differences in Mean Tooth Mortality (Missing and Irreparable Permanent Teeth) Per 100 Children							
Age Group	Year	Inter-City		Inter-Year			
		Sarnia- Brantford	Brantford- Stratford	Years	Sarnia	Brantford	Stratford
6-8	1948	- 5.41 SS	- 0.63 NS	1948-51	3.39 NS	- 0.41 NS	0.42 NS
	1951	- 9.21 SS	0.20 NS	1951-53	- 2.37 NS	0.88 NS	} 0.25 NS
	1953	- 5.96 SS	...	1953-54	- 2.08 NS	- 0.66 NS	
	1954	- 4.54 S	0.23 NS	1948-54	- 1.06 NS	- 0.19 NS	0.67 NS
9-11	1948	-22.40 SS	-23.82 SS	1948-51	0.71 NS	- 5.90 NS	-0.27 NS
	1951	-29.01 SS	-18.19 SS	1951-53	- 4.69 NS	- 8.78 S	} 3.20 NS
	1953	-33.10 SS	...	1953-54	2.50 NS	- 0.29 NS	
	1954	-35.89 SS	- 5.92 S	1948-54	- 1.48 NS	-14.97 SS	2.93 NS
12-14	1948	-52.92 SS	-65.45 SS	1948-51	-11.94 NS	-21.76 SS	1.89 NS
	1951	-62.74 SS	-41.80 SS	1951-53	6.80 NS	-15.26 S	} 1.96 NS
	1953	-84.80 SS	...	1953-54	-21.50 NS	- 2.81 NS	
	1954	-66.11 SS	-21.77 SS	1948-54	-26.64 S	-39.83 SS	3.85 NS

See Table 2 for explanation of symbols

Again in 1954, it has been found that dental caries experience of children in the 6-8 age group in Brantford is of the same order as that of Stratford children aged 6-8 years.

During the period 1948-1954 mean DMF tooth rates have decreased steadily also in Brantford children aged 9-11 years, and in 12-14 age group. Even by 1954,

however, it was too early to expect Brantford to equal the Stratford picture, in these age groups. Many of the Brantford children in the two older groups are children whose permanent tooth formation was already in progress at the time fluoridation of that city's water was instituted. Study of the data presented in Table 4 in conjunction with a chrono-

TABLE 4

MEAN DMF (DECAYED, MISSING, FILLED) PERMANENT TEETH PER CHILD

Age Group	Year	Mean DMF Permanent Teeth Per Child and Standard Error of Mean					
		Sarnia	Brantford	Stratford			
6- 8	1948	1.60 ± 0.064	1.41 ± 0.064	0.41 ± 0.040			
	1951	1.99 ± 0.065	0.93 ± 0.055	0.75 ± 0.055			
	1953	2.05 ± 0.062	0.63 ± 0.049	...			
	1954	1.69 ± 0.073	0.44 ± 0.042	0.47 ± 0.039*			
9-11	1948	4.21 ± 0.114	4.07 ± 0.093	1.13 ± 0.072			
	1951	4.48 ± 0.102	2.85 ± 0.085	1.76 ± 0.081			
	1953	4.67 ± 0.093	2.47 ± 0.080	...			
	1954	4.44 ± 0.095	2.27 ± 0.084	1.46 ± 0.076 *			
12-14	1948	7.94 ± 0.200	7.68 ± 0.164	2.55 ± 0.130			
	1951	8.55 ± 0.187	6.10 ± 0.144	3.12 ± 0.144			
	1953	9.54 ± 0.192	5.51 ± 0.157	...			
	1954	8.84 ± 0.062	4.89 ± 0.159	3.02 ± 0.139*			
Age Group	Differences in Mean DMF Permanent Teeth Per Child						
	Year	Inter-City		Inter-Year			
		Sarnia-Brantford	Brantford-Stratford	Years	Sarnia	Brantford	Stratford
6- 8	1948	-0.19 S	-1.00 SS	1948-51	0.39 SS	-0.48 SS	0.34 SS
	1951	-1.06 SS	-0.18 SS	1951-53	0.06 NS	-0.30 SS	)-0.28 SS
	1953	-1.42 SS	...	1953-54	-0.36 SS	-0.19 S	
	1954	-1.25 SS	0.03 NS	1948-54	0.09 NS	-0.97 SS	0.06 NS
9-11	1948	-0.14 NS	-2.94 SS	1948-51	0.27 NS	-1.22 SS	0.63 SS
	1951	-1.63 SS	-1.09 SS	1951-53	0.19 NS	-0.38 SS	)-0.30 S
	1953	-2.20 SS	...	1953-54	-0.23 NS	-0.20 NS	
	1954	-2.17 SS	-0.81 SS	1948-54	0.23 NS	-1.80 SS	0.33 SS
12-14	1948	-0.26 NS	-5.13 SS	1948-51	0.61 S	-1.58 SS	0.57 SS
	1951	-2.45 SS	-2.98 SS	1951-53	0.99 SS	-0.59 S	)-0.10 NS
	1953	-4.03 SS	...	1953-54	-0.70 SS	-0.62 S	
	1954	-3.95 SS	-1.87 SS	1948-54	0.90 SS	-2.79 SS	0.47 S

See Table 2 for explanation of symbols

logical table of enamel calcification suggests a direct relationship between the degree of caries-resistance of tooth enamel and its developmental status at the time the child began to drink fluoridated water. That a significant amount of caries-resistance is conferred on completed enamel by contact with fluoridated water is brought out clearly by the data for the permanent upper incisors. However, the major benefit appears to be de-

rived by its use, continuously, during the total period of enamel formation.

FIRST PERMANENT MOLARS

Since the first permanent molars are the most caries-susceptible teeth of the permanent dentition, findings concerning the dental caries experience of these teeth are presented separately, in Tables 5 and 6.

The Brantford data presented in Table

FIG. II
DMF PERMANENT TEETH PER CHILD
SARNIA, BRANTFORD & STRATFORD, 1948-1954

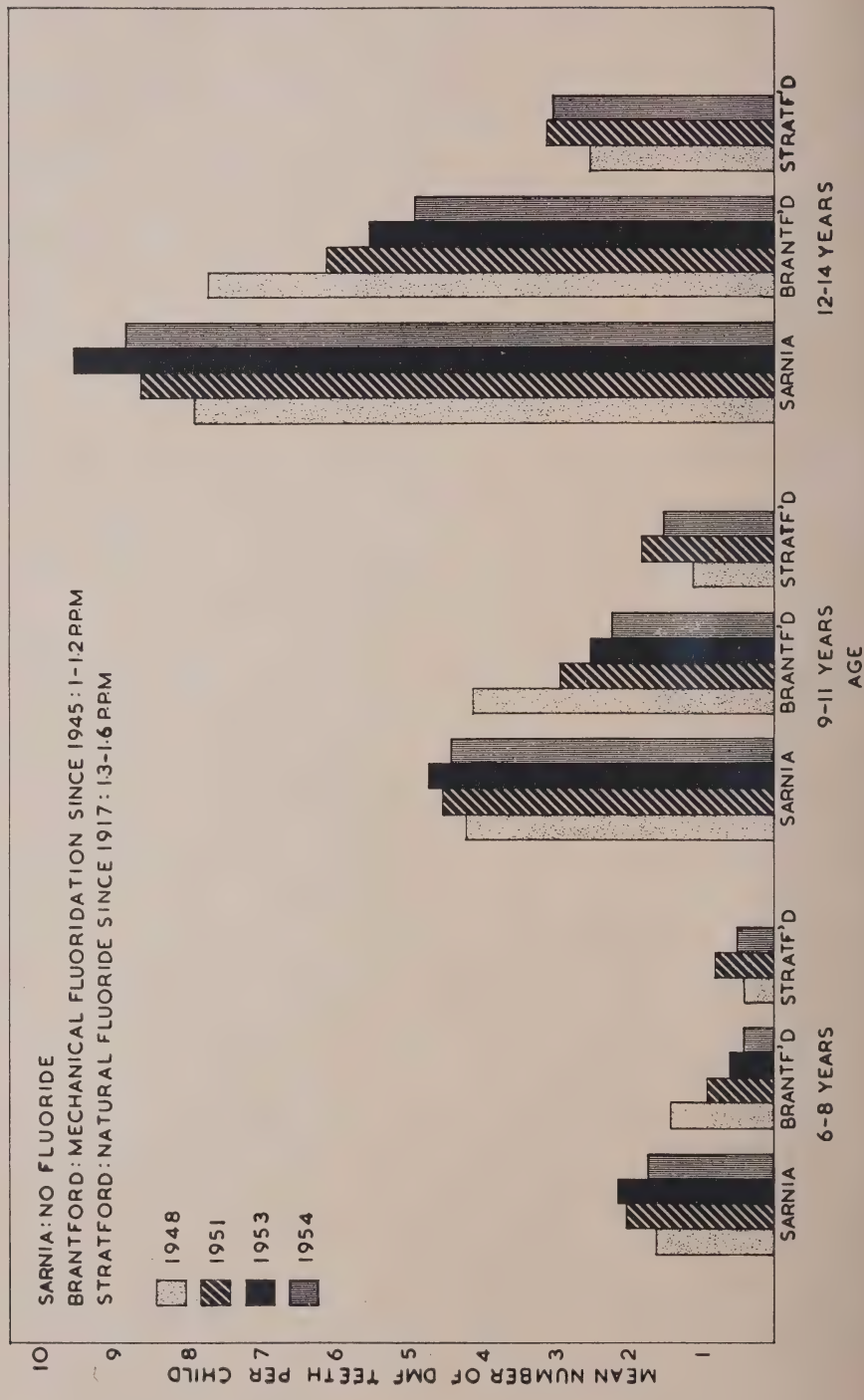


TABLE 5

PERCENTAGE OF CHILDREN HAVING CARIES-FREE FIRST PERMANENT MOLARS

Age Group	Year	Percentage of Children Having Caries-Free First Permanent Molars and Standard Error of Percentage					
		Sarnia		Brantford		Stratford	
6-8	1948	41.26	± 1.904	46.85	± 2.006	78.42	± 1.831
	1951	32.71	± 1.785	59.76	± 2.038	65.19	± 2.136
	1953	32.34	± 1.646	70.15	± 1.996	...	...
	1954	38.52	± 2.069	76.53	± 1.915	75.83	± 1.664 *
9-11	1948	6.65	± 1.046	6.22	± 0.989	52.31	± 2.403
	1951	4.20	± 0.806	17.82	± 1.591	36.40	± 2.253
	1953	2.97	± 0.657	23.38	± 1.809	...	...
	1954	4.66	± 0.875	26.69	± 1.974	44.24	± 2.251 *
12-14	1948	1.03	± 0.451	2.02	± 0.575	33.69	± 2.454
	1951	3.36	± 0.806	4.79	± 0.884	26.33	± 2.215
	1953	1.67	± 0.557	9.46	± 1.288	...	...
	1954	3.11	± 0.742	8.78	± 1.278	28.98	± 2.318 *
Differences in Percentage of Children Having Caries-Free First Permanent Molars							
Age Group	Year	Inter-City		Inter-Year			
		Sarnia-Brantford	Brantford-Stratford	Years	Sarnia	Brantford	Stratford
6-8	1948	5.59 S	31.57 SS	1948-51	-8.55 SS	12.91 SS	-13.23 SS
	1951	27.05 SS	5.43 NS	1951-53	-0.37 NS	10.39 SS	) 10.64 SS
	1953	37.81 SS	...	1953-54	6.18 S	6.38 S	
	1954	38.01 SS	-0.70 NS	1948-54	-2.74 NS	29.68 SS	-2.59 NS
9-11	1948	-0.43 NS	46.09 SS	1948-51	-2.45 NS	11.60 SS	-15.91 SS
	1951	13.62 SS	18.58 SS	1951-53	-1.23 NS	5.54 S	) 7.84 S
	1953	20.39 SS	...	1953-54	1.69 NS	3.33 NS	
	1954	22.03 SS	17.55 SS	1948-54	-1.99 NS	20.47 SS	-8.07 S
12-14	1948	0.99 NS	31.67 SS	1948-51	2.33 S	2.44 S	-7.36 S
	1951	1.43 NS	21.54 SS	1951-53	-1.69 NS	4.67 S	) 2.65 NS
	1953	7.79 SS	...	1953-54	1.44 NS	-0.68 NS	
	1954	5.67 SS	20.20 SS	1948-54	2.08 S	6.76 SS	-4.71 NS

See Table 2 for explanation of symbols

6 show there has been a reduction at all ages, in the number of DMF first permanent molars every year since 1948. Over the period from 1948 to 1954, the reduction was most marked in the 6-8 age group: 69%. In 1948, Brantford children had significantly more caries in first permanent molars at all ages, than did Stratford children. By 1953, the Brantford children aged 6-8 years included a

number whose first permanent molars had been fully calcified and erupted after 1945, when fluoridation of Brantford's water was begun. By 1954, the first permanent molars of Brantford children aged 6-8 years were for the most part calcified under conditions of exposure to fluoridated water, and therefore closely comparable to those of Stratford children. As shown in Table 6, no significant

TABLE 6

MEAN DMF (DECAYED, MISSING, FILLED) FIRST PERMANENT MOLARS PER CHILD

Age Group	Year	Mean DMF First Permanent Molars Per Child and Standard Error of Mean					
		Sarnia		Brantford		Stratford	
6-8	1948	1.55 $\pm$ 0.061		1.39 $\pm$ 0.063		0.41 $\pm$ 0.040	
	1951	1.96 $\pm$ 0.063		0.92 $\pm$ 0.055		0.75 $\pm$ 0.055	
	1953	1.99 $\pm$ 0.058		0.61 $\pm$ 0.048		...	...
	1954	1.66 $\pm$ 0.068		0.43 $\pm$ 0.041		0.47 $\pm$ 0.038 *	
9-11	1948	3.15 $\pm$ 0.051		3.26 $\pm$ 0.048		1.07 $\pm$ 0.065	
	1951	3.43 $\pm$ 0.043		2.52 $\pm$ 0.064		1.62 $\pm$ 0.072	
	1953	3.56 $\pm$ 0.037		2.26 $\pm$ 0.067		...	...
	1954	3.38 $\pm$ 0.047		2.02 $\pm$ 0.070		1.31 $\pm$ 0.067 *	
12-14	1948	3.62 $\pm$ 0.036		3.65 $\pm$ 0.033		1.76 $\pm$ 0.082	
	1951	3.63 $\pm$ 0.040		3.42 $\pm$ 0.045		1.99 $\pm$ 0.080	
	1953	3.76 $\pm$ 0.030		3.15 $\pm$ 0.057		...	...
	1954	3.66 $\pm$ 0.038		3.04 $\pm$ 0.060		1.88 $\pm$ 0.079 *	
Differences in Mean DMF First Permanent Molars Per Child							
Age Group	Year	Inter-City		Inter-Year			
		Sarnia-Brantford	Brantford-Stratford	Years	Sarnia	Brantford	Stratford
6-8	1948	-0.16 NS	-0.98 SS	1948-51	0.41 SS	-0.47 SS	0.34 SS
	1951	-1.04 SS	-0.17 S	1951-53	0.03 NS	-0.31 SS	} -0.28 SS
	1953	-1.38 SS	...	1953-54	-0.33 SS	-0.18 S	
	1954	-1.23 SS	0.04 NS	1948-54	0.11 NS	-0.96 SS	0.06 NS
9-11	1948	0.11 NS	-2.19 SS	1948-51	0.28 SS	-0.74 SS	0.55 SS
	1951	-0.91 SS	-0.90 SS	1951-53	0.13 S	-0.26 S	} -0.31 SS
	1953	-1.30 SS	...	1953-54	-0.18 S	-0.24 S	
	1954	-1.36 SS	-0.71 SS	1948-54	0.23 SS	-1.24 SS	0.24 S
12-14	1948	0.03 NS	-1.89 SS	1948-51	0.01 NS	-0.23 SS	0.23 S
	1951	-0.21 SS	-1.43 SS	1951-53	0.13 S	-0.27 SS	} -0.11 NS
	1953	-0.61 SS	...	1953-54	-0.10 NS	-0.11 NS	
	1954	-0.62 SS	-1.16 SS	1948-54	0.04 NS	-0.61 SS	0.12 NS

See Table 2 for explanation of symbols

difference in first permanent molar caries experience was found between these children in Brantford and Stratford.

In 1948 dental caries in first permanent molar teeth was found to be of the same order in both Brantford and Sarnia. By 1951 it has increased slightly in this type of tooth in Sarnia. Brantford children as compared with Sarnia children have begun to show a significant reduction in the

number of DMF first permanent molars. Again in 1953, and in 1954 it was found that there were significantly fewer carious first permanent molar teeth in Brantford than in Sarnia at all ages.

Until now, most of the effect of fluoridated water in the older half of the 9-11 and all of the 12-14 age groups in Brantford presumably would be topical. Certainly the first permanent molars of chil-

TABLE 7

PERCENTAGE OF CHILDREN HAVING CARIES-FREE PERMANENT UPPER INCISORS

Age Group	Year	Percentage of Children Having Caries-Free Permanent Upper Incisors and Standard Error of Percentage		
		Sarnia	Brantford	Stratford
9-11	1948	76.53 $\pm$ 1.774	82.86 $\pm$ 1.544	97.07 $\pm$ 0.807
	1951	80.94 $\pm$ 1.580	94.46 $\pm$ 0.948	96.93 $\pm$ 0.812
	1953	74.33 $\pm$ 1.683	96.17 $\pm$ 0.817	...
	1954	71.90 $\pm$ 1.867	92.23 $\pm$ 1.195	95.47 $\pm$ 0.943 *
12-14	1948	53.91 $\pm$ 2.261	56.16 $\pm$ 2.037	95.69 $\pm$ 1.053
	1951	53.36 $\pm$ 2.217	69.40 $\pm$ 1.905	90.38 $\pm$ 1.482
	1953	40.82 $\pm$ 2.117	77.03 $\pm$ 1.849	...
	1954	39.67 $\pm$ 2.092	74.08 $\pm$ 1.979	84.60 $\pm$ 1.845 *
Differences in Percentage of Children Having Caries-Free Permanent Upper Incisors				
Age Group	Inter-City			Inter-Year
	Year	Sarnia-Brantford	Brantford-Stratford	Years Sarnia Brantford Stratford
9-11	1948	6.33 S	14.21 SS	1948-51 4.41 NS 11.60 SS -0.14 NS
	1951	13.52 SS	2.47 NS	1951-53 - 6.61 S 1.71 NS
	1953	21.84 SS	...	1953-54 - 2.43 NS - 3.94 S }-1.46 NS
	1954	20.33 SS	3.24 S	1948-54 - 4.63 NS 9.37 SS -1.60 NS
12-14	1948	2.25 NS	39.53 SS	1948-51 - 0.55 NS 13.24 SS -5.31 S
	1951	16.04 SS	20.98 SS	1951-53 -12.54 SS 7.63 S
	1953	36.21 SS	...	1953-54 - 1.15 NS -2.95 NS }-5.78 S
	1954	34.41 SS	10.52 SS	1948-54 -14.24 SS 17.92 SS -11.09 SS

See Table 2 for explanation of symbols

dren in these age groups had been completely or nearly completely formed prior to the date when fluoridation was begun. Despite this, during the period 1948-1954, there has been a 38% reduction in DMF first permanent molars in Brantford children aged 9-11 years, and a 17% reduction in the case of 12-14 year children. As yet, however, Brantford children in these age groups have not reached the low levels of caries experience exhibited by Stratford children of similar age.

UPPER PERMANENT INCISORS

The upper permanent incisors show more dramatically than any other type of

tooth the effect of water-borne fluorides. The enamel of these teeth for the Brantford 12-14 year age group in 1954 was for the most part calcified 9 to 11 years ago, i.e., before fluoride was added to the water there; yet the percentage of children caries-free in that age group is greater than that for the corresponding age group in Sarnia. The difference was also significant for the 1951 and 1953 surveys. This must be presumed to be due to the topical effect of the fluoride on already calcified enamel. (See Tables 7 and 8).

In the Brantford 9-11 year age group the enamel of the incisors was calcified to a much lesser degree, before fluorida-

TABLE 8

MEAN DMF (DECAYED, MISSING, FILLED) PERMANENT UPPER INCISORS PER CHILD

Age Group	Year	Mean DMF Permanent Upper Incisors Per Child and Standard Error of Mean					
		Sarnia		Brantford		Stratford	
9-11	1948	0.56 $\pm$ 0.048	0.34 $\pm$ 0.034	0.01 $\pm$ 0.007			
	1951	0.43 $\pm$ 0.041	0.11 $\pm$ 0.021	0.04 $\pm$ 0.011			
	1953	0.56 $\pm$ 0.043	0.05 $\pm$ 0.013	...			
	1954	0.60 $\pm$ 0.046	0.11 $\pm$ 0.018	0.07 $\pm$ 0.017 *			
12-14	1948	1.16 $\pm$ 0.066	1.05 $\pm$ 0.058	0.07 $\pm$ 0.020			
	1951	1.16 $\pm$ 0.065	0.64 $\pm$ 0.046	0.15 $\pm$ 0.025			
	1953	1.56 $\pm$ 0.067	0.53 $\pm$ 0.048	...			
	1954	1.52 $\pm$ 0.065	0.50 $\pm$ 0.044	0.25 $\pm$ 0.034 *			
Age Group	Differences in Mean DMF Permanent Upper Incisors Per Child						
	Year	Inter-City		Inter-Year			
		Sarnia-Brantford	Brantford-Stratford	Years	Sarnia	Brantford	Stratford
9-11	1948	-0.22 SS	-0.33 SS	1948-51	-0.13 S	-0.23 SS	0.03 SS
	1951	-0.32 SS	-0.07 SS	1951-53	0.13 S	-0.06 S	} 0.03 NS
	1953	-0.51 SS	...	1953-54	0.04 NS	0.06 S	
	1954	-0.49 SS	-0.04 NS	1948-54	0.04 NS	-0.23 SS	0.06 SS
12-14	1948	-0.11 NS	-0.98 SS	1948-51	0.00 NS	-0.41 SE	0.08 NS
	1951	-0.52 SS	-0.49 SS	1951-53	0.40 SS	-0.11 NS	} 0.10 S
	1953	-1.03 SS	...	1953-54	-0.04 NS	-0.03 NS	
	1954	-1.02 SS	-0.25 SS	1948-54	0.36 SS	-0.55 SS	0.18 SS

See Table 2 for explanation of symbols

tion began, than that of the 12-14 year age group. Here (9-11 age group), the Stratford condition is much more closely approached by both the Brantford 1953 and 1954 data. However, not until 1956, when the 6-8 age group of 1953 in Brantford becomes the 9-11 age group can true equality with that age group for Stratford be expected.

DECIDUOUS TEETH

Our experience has been that a df index for primary teeth does not provide as reliable an index of caries experience as does the DMF index for permanent teeth.

Extraction of more d (decayed) teeth in a given community in one year than in another, or more extractions in one community than in another may affect the reliability of the information to some degree. It is at least theoretically possible that a high deciduous caries rate in a community may lead to a higher extraction rate there, thus obliterating the evidence. Nevertheless, it is of interest to note that the index values for deciduous teeth (Tables 9 and 10) indicate the same general trends as between cities and surveys as shown by the data for permanent teeth. In 1951, 1953 and 1954 deciduous

TABLE 9

PERCENTAGE OF CHILDREN HAVING CARIES-FREE DECIDUOUS TEETH

Age Group	Year	Percentage of Children Having Caries-Free Deciduous Teeth and Standard Error of Percentage					
		Sarnia		Brantford		Stratford	
6-8	1948	10.16 $\pm$ 1.170		12.28 $\pm$ 1.320		35.65 $\pm$ 2.131	
	1951	10.13 $\pm$ 1.146		22.80 $\pm$ 1.743		30.38 $\pm$ 2.063	
	1953	9.42 $\pm$ 1.027		21.67 $\pm$ 1.797		... $\pm$...	
	1954	8.32 $\pm$ 1.174		29.18 $\pm$ 2.054		31.42 $\pm$ 1.804*	
9-11	1948	33.63 $\pm$ 1.977		34.96 $\pm$ 1.956		40.97 $\pm$ 2.366	
	1951	32.47 $\pm$ 1.883		33.56 $\pm$ 1.965		41.23 $\pm$ 2.305	
	1953	37.39 $\pm$ 1.864		40.33 $\pm$ 2.095		... $\pm$...	
	1954	37.93 $\pm$ 2.015		38.65 $\pm$ 2.173		41.98 $\pm$ 2.239*	
Age Group	Differences in Percentage of Children Having Caries-Free Deciduous Teeth						
	Inter-City			Inter-Year			
	Year	Sarnia-Brantford	Brantford-Stratford	Years	Sarnia	Brantford	Stratford
6-8	1948	2.12 NS	23.36 SS	1948-51	-0.03 NS	10.52 SS	-5.26 NS
	1951	12.67 SS	7.58 S	1951-53	-0.71 NS	-1.13 NS	) 1.04 NS
	1953	12.25 SS	...	1953-54	-1.10 NS	7.51 S	
	1954	20.86 SS	2.24 NS	1948-54	-1.84 NS	16.90 SS	-4.23 NS
9-11	1948	1.33 NS	6.01 S	1948-51	-1.16 NS	-0.40 NS	0.26 NS
	1951	1.09 NS	7.67 S	1951-53	4.92 NS	6.77 S	) 0.75 NS
	1953	2.94 NS	...	1953-54	0.54 NS	-1.68 NS	
	1954	0.72 NS	3.33 NS	1948-54	4.30 NS	3.69 NS	1.01 NS

See Table 2 for explanation of symbols

teeth in the 6-8 age group were considerably less carious in Brantford than in Sarnia. This, with the Brantford inter-year differences for that age group for the four successive surveys, suggests that primary teeth whose enamel calcification has been affected by fluoridated water since birth are considerably more caries-resistant than those in the fluoride-free control city. The benefit derived by the Brantford 9-11 year age group in the primary dentition is clearly less than that obtained by the 6-8 age group.

ORAL HYGIENE

Table 11 shows an assessment of the oral hygiene in each of the three cities. It

is considered that any claim to a reasonable degree of validity of these figures rests upon the fact that all the examinations to date have been done by the same examiner. Classification and recording of oral hygiene was undertaken because it was considered that marked differences in oral hygiene as between the test and the control groups might conceivably affect the findings—or at least might be taken into consideration as a modifying factor, although not a strictly measurable one. However, the figures here suggest that, since 1948, differences in oral hygiene status could not have been a major factor in either the caries level changes

TABLE 10
MEAN df (decayed, filled) DECIDUOUS TEETH PER CHILD

Age Group	Year	Mean df Deciduous Teeth Per Child and Standard Error of Mean					
		Sarnia		Brantford		Stratford	
6- 8	1948	4.89 ± 0.122		4.95 ± 0.134		2.20 ± 0.107	
	1951	4.89 ± 0.119		3.58 ± 0.126		2.62 ± 0.115	
	1953	5.17 ± 0.113		3.22 ± 0.125		... ± ...	
	1954	5.21 ± 0.132		2.76 ± 0.120		2.63 ± 0.110 *	
9-11	1948	2.50 ± 0.111		2.37 ± 0.101		1.66 ± 0.095	
	1951	2.41 ± 0.101		2.25 ± 0.098		1.76 ± 0.094	
	1953	2.26 ± 0.094		1.94 ± 0.097		... ± ...	
	1954	2.11 ± 0.098		1.93 ± 0.095		1.58 ± 0.089 *	
Differences in Mean df Deciduous Teeth Per Child							
Age Group	Year	Inter-City		Inter-Year			
		Sarnia-Brantford	Brantford-Stratford	Years	Sarnia	Brantford	Stratford
6- 8	1948	0.06 NS	-2.75 SS	1948-51	0.00 NS	-1.37 SS	0.42 S
	1951	-1.31 SS	-0.96 SS	1951-53	0.28 NS	-0.36 S	} 0.01 NS
	1953	-1.95 SS	...	1953-54	0.04 NS	-0.46 S	
	1954	-2.45 SS	-0.13 NS	1948-54	0.32 NS	-2.19 SS	0.43 S
9-11	1948	-0.13 NS	-0.71 SS	1948-51	-0.09 NS	-0.12 NS	0.10 NS
	1951	-0.16 NS	-0.49 SS	1951-53	-0.15 NS	-0.31 S	} -0.18 NS
	1953	-0.32 S	...	1953-54	-0.15 NS	-0.01 NS	
	1954	-0.18 NS	-0.35 S	1948-54	-0.39 S	-0.44 SS	-0.08 NS

See Table 2 for explanation of symbols

within Brantford or the caries level differences between the control cities.

MOTTLED ENAMEL

In a previous report (5) the appearance of a few cases of mild mottling, detectable only by an experienced observer, were described from our findings at Stratford, where the water contains 1.3 to 1.6 parts per million of fluoride. These were barely discernible whitish flecks and not unsightly. The newly erupted six-year molars observed in the 1954 survey in Brantford, the total enamel calcification of which had taken place since the water was fluoridated there, showed in some cases

this very mild type of mottling which can be detected only by an experienced examiner. But in Sarnia, where the fluoride content of the water is negligible, a few cases of mild mottling resembling very closely those seen in Stratford and Brantford were also observed and recorded. It is apparent therefore, that mottling does occur in communities where water-borne fluorides could not be the cause.

OTHER EFFECTS OF FLUORIDATION

The Medical Officer of Health for Brant County, Dr. W. L. Hutton, reports that no ill-effects of any kind have been detected there, after more than 9 years of

TABLE 11

PERCENTAGE DISTRIBUTION OF CHILDREN EXAMINED, ACCORDING
TO ORAL HYGIENE STATUS

City	Year	Percentage of Children Examined			
		Good	Fair	Poor	Total
Brantford	1948	34.3	30.6	35.1	100.00
Brantford	1951	34.2	32.8	33.0	100.00
Brantford	1953	38.7	36.4	24.9	100.00
Brantford	1954	36.8	31.4	31.8	100.00
Sarnia	1948	19.7	28.0	52.3	100.00
Sarnia	1951	19.2	36.3	44.5	100.00
Sarnia	1953	28.0	37.6	34.4	100.00
Sarnia	1954	19.2	27.5	53.3	100.00
Stratford	1948	17.8	37.5	44.7	100.00
Stratford	1951	10.1	42.1	47.8	100.00
Stratford	1954	31.0	41.1	27.5	100.00

fluoridation. This year he asked the Brantford physicians if they had observed any ill effects that might be attributable to fluoride. The following reply dated May 10th, 1954, was received:

"At a recent meeting of the Medical Staff of the Brantford General Hospital, the members were asked if they had seen any untoward effects from the use of fluoridated water in this vicinity, with the result that no such observations had been made by any practitioner to the best of our knowledge."

A similar statement, without special reference to Brantford, was made in an official joint pronouncement issued by the Canadian Dental Association and the Canadian Medical Association in January, 1953 (9). This was followed by an official approval of fluoridation by the Canadian Medical Association at its 87th Annual Meeting, in June 1954, at Vancouver (10).

SUMMARY

The 1954 findings of the Brantford

Fluoridation Study show a continuing reduction in dental caries in Brantford children, during the year since the study was last reported upon (6). Review of these data, together with those of earlier surveys in 1948, 1951, 1953 (4,5,6), shows that a statistically significant and progressive reduction in the dental caries experience of Brantford children, at all ages studied, has taken place from year to year since 1948.

During the period 1948-1954, dental caries has been reduced by approximately 69% in Brantford children aged 6-8 years, by 44% in the 9-11 age group, and by 36% in the case of the 12-14 age group. During the same period, dental caries experience of children in the two control cities, on the other hand, either has remained at about the 1948 levels, or has increased slightly, at all ages studied.

After nine years of fluoridation in Brantford, the differences between caries resistance of Brantford children and that of Sarnia children (non-fluoride control),

age for age, have become most marked. Of even greater significance, however, has been the observation (1953, again in 1954) that there are no longer any significant differences, either in the prevalence or incidence of dental caries, between Brantford and Stratford children, aged 6-8 years. The gap between dental caries levels of Brantford and Stratford children in the older age groups has narrowed considerably. It is still too early, however, to expect Brantford caries levels, in the case of children aged 9-14 years, to fall within the range exhibited by Stratford children of the same age. Even in 1954, there was a preponderance of Brantford children in the older age groups, whose tooth enamel formation had been considerably advanced at the time fluoridation was instituted in that city, in 1945.

Our study has revealed no evidence of either a dental or a medical nature which would contraindicate the fluoridation of a public water supply to a level similar to that in use in Brantford. Similar conclusions are expressed in official statements by the Canadian Dental Association and the Canadian Medical Association. Both of these bodies have officially approved fluoridation (10,11). However, it is suggested that communities now planning fluoridation might profitably recognize the possibilities of adding to the present knowledge on the subject. The adoption of uniform methods of carrying out dental surveys, along with sound statistical procedures, would make possible a comparison of findings between different communities and thereby add to the information now available, while at the same time providing health authorities with a reliable basis upon which to report the established dental health benefits of fluoridation. To assist in this matter the Dental Health Division and the Research Division have prepared a publication which may be had from the former on request (7).

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BIBLIOGRAPHY

- (1) Hutton, W. L., Linscott, B. W., and Williams, D. B., Brantford Fluorine Experiment, *Can. Jour. of Pub. Health*, 42:3:81, March 1951.
- (2) Moulton, F. R., ed., *Dental Caries and Fluorine*, Am. Assoc. for the Advancement of Science, Lancaster Science Press, 1946.
- (3) Brown, H. K., Fewer Cavities in Stratford, Canada's Health and Welfare, 5:1: 2-4, Oct. 1949.
- (4) Brown, H. K., Mass Control of Dental Caries by Fluoridation of a Public Water Supply, *J.C.D.A.*, 17:11: 609-613, Nov. 1951.
- (5) Brown, H. K., Mass Control of Dental Caries by Fluoridation of a Public Water Supply, *J.C.D.A.*, 18:4: 200-204, April 1952.
- (6) Brown, H. K., Mass Control of Dental Caries by Fluoridation of a Public Water Supply, *J.C.D.A.*, 19:12: 652-667, Dec. 1953.
- (7) The Dental Health Division and the Research Division of the Department of National Health and Welfare, Ottawa, A Suggested Methodology for Fluoridation Surveys in Canada (1952).
- (8) Knutson, J. W., An Index of the Prevalence of Dental Caries in School Children, *U.S.P.H. Reports*, 59:8: 253-263, Feb. 25/44.
- (9) The Fluoridation of Communal Water Supplies for the Partial Prevention of Tooth Decay, *J.C.D.A.*, 19:3: 148-149, March 1953.
- (10) Proceedings of the 87th Annual Meeting of the Canadian Medical Association, (June 1954).
- (11) Official C.D.A. Resolution Approving Fluoridation, *J.C.D.A.*, 19:11: 616, Nov. 1953.

Dental teaching in Canada

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The story of the development of dental education in Canada has followed a similar pattern in those provinces which have developed dental schools. First, the formation of a legal dental body composed of those who had met the requirements for practice in that province. Second, the examination of the qualifications of candidates for practice. Third, the formation of a school which would educate students to the required pattern. The provinces of Ontario, Quebec, Nova Scotia and Alberta have taken all three steps.

The beginning of organized dentistry in Canada dates from a gathering of nine men in Kingston in January, 1867. This preliminary meeting was followed by more representative groups in Coburg in July of the same year and in Toronto in January 1868. There were at this time about 175 dentists in the province. A proposed Dental Act was drawn up. This was passed by the Legislature and became law on March 4th, 1868. This law required five years practice in a dental office, prior to registration. The Ontario law was the first on the Continent except for a simple act, containing five clauses, which had been passed by the State of Alabama in 1841. It was a time when a lot of tramp dentists of doubtful ability were on the move and many crossed from the United States into Canada. Even those who had been in practice for 5 years generally showed a deplorable lack of ability. It was decided that a dental school was absolutely necessary in order that those who were planning to practice dentistry might command a measure of respect from the other professions.

Dr. G. L. Elliott made an attempt to establish the Canadian Dental College in Toronto in 1868. It was an ephemeral attempt which was made in direct opposi-

tion to the wish of the majority of members of the Board of the Royal College of Dental Surgeons. The result was that its existence was short and its usefulness was insignificant. The 1868 Act gave the Board authority to open a school and in 1869, the Board decided to open their own school as the teaching department of the Royal College of Dental Surgeons. In the latter part of that year, F. G. Callendar and John O'Donnell undertook to conduct classes in dental subjects in a building at the corner of Church and Court Streets. Drs. Day and Chittenden were associated with them. Two students were enrolled. The medical subjects were taught in the Medical College of Victoria University with the medical students. This arrangement failed as a result of mismanagement in the dental department. While no fault was found with either the teachers or the teaching, there was complete lack of management and reckless disposition of funds to the point that the furnishings had to be realized on in order to satisfy demands of the creditors.

In 1870, Dr. J. B. Willmott was elected to the Board of the Royal College of Dental Surgeons and became its Secretary. The Board decided to establish its own school. The directors were not to assume any financial responsibility, beyond any grant which might be voted to aid the school. There were to be at least 8 students and the grant was set at \$25.00 for furnishing and \$150.00 per annum for rent. In 1876, he, together with Dr. Luke Teskey, opened a school at the corner of Richmond and Victoria Streets with 11 students in attendance. They were later joined by Drs. W. T. Stuart and W. E. Willmott. This group were successful in developing the school, which was eventually to become the Dental Faculty of Toronto University.

There was at first only nominal matriculation standards for entrance and it looked as if the profession might be

filled with illiterates. This thought, together with a realization that a good general education is an essential element in the dignity of a profession, induced the Board to set up a high standard of matriculation by 1898.

The course consisted originally of two winter terms of lectures. Candidates were required to pass an intermediate and final examination, with an interval of not less than a year between examinations. There was at first no dental infirmary in the school and students obtained their practical instruction by indenturing with a registered practitioner, or preceptor.

The College was successful from the start and by the term of 1889-90 there were 44 juniors and 31 seniors in attendance. Fees were \$100.00 annually.

An annual meeting of the Royal College of Dental Surgeons held in 1892 gives some interesting information on finances. Gross receipts from student fees were \$9,060, expenses of the school were \$1,724. Drs. J. B. Willmott, Stuart and Teskey each received \$2,324. The balance, as well as any other receipts, went toward payment of Dr. W. E. Willmott and demonstrators.

In 1893 the attendance had increased to the point that the Board passed a motion that it should assume complete control of the school. It was to receive all fees from students, as well as any other income which might be received. The Board, on its part, could engage all teachers and demonstrators and these would be paid a salary. The entire building on Louisa Street was taken over to meet the growing demands of the School. Dr. J. B. Willmott was elected Dean, with a salary of \$250.00 per year.

The construction of a new building was commenced in 1895 and completed in 1896 at 93 College Street. This was to be 50 x 106 feet, with three stories and containing 18,000 square feet of floor space. The cost of the property, including fittings and appliances, was estimated at about \$45,500.00. The Board had saved

\$16,000.00 out of expenses and it was considered this would be sufficient for starting construction.

A difficulty experienced in the early years of the School was that the Royal College of Dental Surgeons had no degree granting power, while all sorts of United States schools were able to grant degrees. This power was confined to the University of Toronto. While prompt application was made for affiliation of the School with the University, this did not take place until 1888 when the School was affiliated with the University for granting of degrees. The first examinations under this scheme were held in March, 1889, and the first Doctor of Dental Surgery degrees awarded in that year.

The course was increased to 4 years, starting in 1902. Students registered for 4 years with a preceptor and during that time attended dental college for 4 full terms. The preceptor system was beginning to meet with criticism. While the practice was necessary in the early days of dental education, when facilities for clinical instruction were not available in schools, it became less essential when schools set up their own systematic clinical instruction. The method outlived its usefulness and while many preceptors were of the highest quality, others were indifferent and did nothing to advance the dental knowledge of the student. In 1910, the Board abolished the preceptor requirements during the first two years of the course.

The building which had been erected in 1896, had to be enlarged in 1898 and a second large addition made in 1902. This building was inadequate by 1907 and negotiations were entered into with the University to establish a Faculty of Dentistry as an integral part of the University. These fell through. The building was moved to 230 College Street and enlarged in 1920. All of these buildings and additions were financed out of dental school receipts.

The University and the Dental School conducted joint examinations in the

period 1906-1925. In the latter year the School became the Faculty of Dentistry of Toronto University and since that date the University has conducted all examinations and each year forwards to the Royal College of Dental Surgeons a list of candidates for Ontario licence, who have met the prescribed requirements.

The situation in Quebec was more complicated than in Ontario since almost from the first it was realized that adequate instruction in both French and English was essential. The College of Dental Surgeons of the Province of Quebec was organized in 1889 as a board of examiners. Previous to the formation of a dental school, candidates for practice served an indentureship with a preceptor and, in addition, were required to take short courses in Anatomy, Chemistry and Physiology. A series of head and neck dissections were taken at either Laval or McGill and examinations given. An interesting comment was made by Dr. G. Beers, when he was editor of the *Dominion Dental Journal*. He stated that when he was indentured in Quebec he had to take an oath before a notary that he would not divulge any of the professional secrets of his preceptor. Attempts were made, without success, to interest Laval and McGill to undertake dental education. It appears that at McGill an important difficulty was over the granting of a degree. The University proposed to give a G.D.S. Graduate of Dental Surgery. This, in spite of the fact that they were at the time giving the veterinary degree of D.V.S. In 1892, the Board of Examiners succeeded in organizing a dental school with W. George Beers, D.D.S. as Dean. The technical and some basic subjects were taught in this school, while the academic preparation for English speaking students was at Bishop's College and for French speaking at Laval University. At much the same time the University of Bishop's College at Lennoxville, which has an affiliated Faculty of Medicine in Montreal, began organization of a Faculty of Dentistry. In the spring

of 1893 the two projects were united to become the Dental College of the Province of Quebec. This was opened in a leased building at Phillip's Square. The course was compulsory for all students presenting for practice in Quebec. Students had to pass the regular examinations for admission to the study of medicine at McGill or Laval. This was necessary before entering the school or starting indentureship.

The first graduates were given a D.D.S. degree. The arrangement made in the enabling Act of the Quebec Parliament was that French and English instruction was to be given in duplicate sections of the College. This plan of bilingual instruction developed unexpected mechanical and financial difficulties. These finally resulted in a decision for the establishment of separate French and English schools. In 1903, a complete dental course was organized for French speaking students at Laval University, through the efforts of Drs. Dubeau, Nolin and Gendron. The Laval school opened with two students who graduated in 1905. Quarters were allotted to the Dental School by Laval in 1904 in their main building on St. Denis Street and a 4 year course set up. The existing small infirmary to be replaced by a larger one. In 1913 a new building opened with accommodation for 200 students. Cost of this building was around \$250,000.00. That year the Dental College of the Province of Quebec was abolished and dental education left in the hands of McGill and Laval schools. In 1921, this school became the Faculty of Dental Surgery of Montreal University and is still the only school in the Western Hemisphere to give instruction in French.

McGill opened in 1903, with the first graduates receiving a Master of Dental Surgery degree. The school was organized as the Department of Dentistry of the Medical Faculty, which provided the necessary lecture room and laboratory space. Clinical teaching was first given in a clinic conducted by the Quebec Dental Association in the French school on

St. Denis Street. A few years later larger quarters were assigned the school in a portion of the medical buildings and a dental teaching clinic was established at the Montreal General Hospital. From 1910 on, all graduates were granted the D.D.S. In January, 1920, the Department of Dentistry became the Faculty of Dentistry of McGill University, with Dr. A. W. Thornton as Dean.

Nova Scotia, in 1862, had a population of about 200,000 and there were 10 dentists of whom none had dental degrees, but 2 held M.D. degrees and practised dentistry. Halifax, with a population of 20,000 had 7 dentists. The number in the province had increased to 64 when the Dental Act was passed in 1891. Of these some 35 had degrees. The population, by that time, had increased to around 500,000.

By 1890 there were 10 dentists in Prince Edward Island of whom only a couple had degrees. The first dental legislation making registration compulsory in Prince Edward Island was passed in 1891. This law permitted candidates to study dentistry in the office of a preceptor for two years, then take an examination. At the time this Act was passed there were 3 candidates indentured in dental offices.

An advertisement in the Charlottetown Examiner of May 1880 was typical of the flamboyant claims of the itinerant dentists who were circulating through the provinces, at that time and showed the need of policing. The advertisement read in part: "The King of dentists will perform on his electro-instruments unknown to anyone. Positively no fear of pain. The professor can be consulted on all kinds of diseases." I have been told by a dentist who saw him in operation, that he could actually extract teeth very well and used the turn-key for extraction quite skilfully. An extraction of a lower molar was followed by excessive hemorrhage. The irate husband threatened to take legal action, with the result that the learned professor left the city quietly and permanently.

An attempt was made by Dr. Andrew F. McAvenny of Saint John in 1869 to obtain a dental act but it was defeated. A new attempt was made by Dr. C. A. Murray of Moncton in 1889 and in the following year an Act was passed. In 1893 an amendment to the Act placed the preliminary education qualifications at about the eighth grade, a Board of Examiners was also set up to pass on candidates for licence. A loop hole was provided in the Act, which was to the effect that any candidate dissatisfied with the decision of the Council might appeal, and on order of the Governor-in-Council his name might be placed on the register. This led to numerous cases of abuse.

The first definite steps leading to the formation of a dental school in Halifax, which was intended to take care of the needs of New Brunswick and Prince Edward Island as well as of Nova Scotia, were taken by a group, under the leadership of Dr. Frank Woodbury, at a meeting of the Nova Scotia Dental Association in September, 1905. The enabling Act was passed by Nova Scotia Legislature in 1907. This authorized the establishment of a dental school, either independent or in affiliation with a university or college.

The Maritime Dental College was opened with an initial class of 5 students in 1908, with Dr. Frank Woodbury as the first dean. The school was affiliated with the Halifax Medical College and Dalhousie University. Instruction in science subjects was given in the University and in the medical science subjects at the Halifax Medical College with the medical students. The dental courses were given in a couple of rooms set apart in the main university building on Carleton Street. In 1912 the school became a Faculty of Dentistry of Dalhousie. This was the first school in Canada to become a Faculty of a University. The first class graduated with the degree of D.D.S. from Dalhousie in 1912. Quarters have been enlarged several times and have now reached the point where no further expansion is possible in the present building. Plans are

underway for the construction of a new building.

Initial steps towards the formation of a dental school in Alberta were taken in 1916, when the Senate of the University of Alberta passed a resolution providing for instruction in the first two years of the dental course. Arrangements were made with the Toronto and McGill schools to give the two clinical years. The plan was held up as a result of the war and did not get under way until the fall of 1918. Drs. Bulyea and Fuller were appointed instructors in dental subjects in 1919-20. The school was first organized as a department of the Medical School of the University of Alberta. In 1921 teaching was expanded to three years and starting in 1924 the complete four year course was given. It was then reorganized with Dr. Bulyea as director. In 1944, the school became the Faculty of Dentistry of the University of Alberta, with Dr. W. Scott Hamilton as the first dean.

The above story of the development of the five Canadian schools has been characterized by an integrity and honesty of purpose of which any profession in any country might well be proud. There has not been here some of the abuses which bedevilled our confreres in the United States. They have had their "diploma mills", where the main, and sometimes only, qualification for practice was possession of the necessary fee to pay for the diploma. It is also not so many years since the commercial schools, run for the benefit of the stock holder, with scant consideration for the quality of dental education dispensed were either closed down or reorganized and affiliated with a reputable university. In the closing years of the last century there appeared advertisements for the "Union College of Painless Dentistry" in Chicago. Full sets of teeth were advertised for \$2.00 and the wish was expressed that every man, woman and child in Chicago might have their mouths examined by the "professors" of the "College".

The most pressing problem before our

Canadian schools at this time is the need to provide facilities for training more students. This will mean either an increase in the accommodation in the present schools, or starting new schools. While McGill, Toronto, Dalhousie are at present either building or planning new schools which will help, the planned increase is not enough to meet the expected present requirements. Further, there is the problem of individual size. A school may be too small to adequately provide all required facilities and conversely it may be too large for top efficiency. While the costs of expansion are high, particularly in these days of tight university budgets, they are not as formidable as those which must be met by the new school.

The number of suitable locations for new schools are rather limited, since certain basic requirements must be met:

1. To serve an area not adequately supplied at this time.
2. Be in association with a good medical school, and
3. Be a faculty of a recognized university.

This suggests: Quebec, London, Winnipeg and Vancouver. These are referred to particularly since in each of these areas more or less planning for new schools has already been done. It is of interest to note that a Committee was set up in Manitoba at least as early as 1911 to discuss the question of dental education with the local university. The fact that this has not resulted in definite action up to this time may serve to stress the difficulties faced in starting new schools.

The question is frequently asked as to the costs of starting a new school and anyone who has read the articles in the *Financial Post* in recent years on University costs will perhaps not be surprised to learn that there will be a very wide range in such cost estimates. There is reasonably good data available on the capital costs for the building space. It may have been noted above that the costs per student in the early years of this cen-

tury ran about \$1,000 per student. Today the two schools who have new buildings on the planning board expect their costs to run between \$3,000 and \$4,000 per student. To this must be added the present heavy costs for equipment and appliances. However, here again one can make a reasonably definite estimate of around \$2,000 per student.

It is when we try to estimate administration costs that we run into serious difficulty. This is hard to understand for the person who has not been responsible for setting up university budgets. It would seem perhaps simple to estimate the classes which must be taught and the salaries and other incidental expenses to meet this. Each University sets up its budget by a method which has served for its own use and there is not yet any common, fixed pattern. It is therefore very difficult to arrive at even approximate figures, which are not subject to argument, for the education costs per student in any faculty. In Canada the Dental Faculty costs are more or less complicated by at least two main outside influences: 1. What costs will be charged to the dental school for teaching medical science classes by the Medical Faculty? 2. What costs will the Dental Faculty be assessed as its share of general university administration costs. No mention has been made here of costs for research or post graduate training, since these would not be heavy in the new schools but will have to be taken into consideration at a later date.

The general pattern of dental education in Canada has become fixed with, on the one hand, the Dental Association which is chiefly interested in clinical training and, on the other hand, the University, which is interested in general educational standards.

When Dean G. V. Black came back from a visit to France in 1888 with the thought of establishing a dental infirmary in the North Western Dental School at Chicago, he started a plan which has had far reaching effects. The early results led to the disappearance of the inefficient

preceptor method for clinical instruction, but the later results have been much more far reaching. Dentistry is the one profession which is able to give an almost complete training within its walls and under its supervision, so that all facilities may be used with the greatest efficiency. Where clinical training must be given elsewhere, not under the direct control of the school, there are inevitable conflicts of ideas.

In a period of optimism in the years just preceding the 1929 crash, first one, and then later a second pre-professional year, was added to the dental course. Today there is a very definite movement toward a B.A. or B.Sc. degree as a preliminary to the study of medicine. There is so far but little suggestion that dentistry should require the same. If the numbers entering dental schools were to materially increase, the same demand might arise in dentistry. It is to be hoped that if and when this suggestion seriously arises that it will be most carefully studied. The addition of a further year to an already long and expensive course should not be lightly undertaken. If a further year, or years, is to be added, is this the place where the addition will be in the best interests of the student? The demands for clinical training are also increasing. The expressed thought that additional time in pre-professional studies will result in more mature students, better able to take advantage of training in dental studies is questionable. Too often it has proved to be a series of examination hurdles to be passed by the student before he starts dealing with patients. Our aim should be a graduate who is well versed in the clinical methods of the day and who, at the same time, has a trained, educated mind, who will advance with the profession, a credit to himself and his school.

In Canada, some at least of our men in the future will take advanced training outside our own borders. It is perhaps unfortunate in some ways, that in order to meet requirements for admission, it may

be necessary for us to follow other educational plans quite closely. Thus, in this matter of dental education, we may not be entirely free agents.

We have seen something of the educational advance of our profession in this country within some 75 years. This was

made possible because of the high ideals of the men enlisted as teachers. Today, with the same idealism and the added advantage of the recruiting of specially trained teachers we can look forward with confidence to the future of dental education in Canada.

President's address

Annual Meeting, September 6, 1954

St. Andrews-by-the-Sea, New Brunswick

*Mr. Chairman, Ladies and Gentlemen,
and Honoured Guests:*

It is fitting that at our Annual Meeting your President should review the activities of the Association and bring to your attention some of the high-lights of the year's work with a possible glance into the future.

We have just completed a four day meeting of the Board of Governors, a meeting given over to the study of some 25 reports submitted by Committee Chairmen. Time was provided for the discussion of certain policies to be pursued for your Association in the coming year.

May I be permitted at this time, Mr. Vice-President, to offer my thanks to the members of the Board of Governors, Committee Chairmen, and others who attended these meetings for the earnestness in which they attack the tremendous task of sifting from out of these reports all that was best for the conduct of the affairs of your organization.

I would like to direct special mention to the chairmen of committees responsible for the creation and co-ordination of the very informative material which these reports contained.

A healthy organization such as ours requires a well-informed membership, men well versed not only in the scientific

side of our profession but equally so in its problems and activities.

Your Board of Governors is ever cognizant of this fact and displays a keen interest in the report of the Committee on Publications whose efforts are responsible for the production of an outstanding Journal.

We lean heavily on our Journal as a medium for dispensing information of Association interest and clinical value to our members, and we strive to maintain its high standard in the field of professional Journalism.

In reading the many reports presented to the Board of Governors one cannot but be impressed by the high motive, the sincere effort and the genuine desire to bring about a better educational standard and a general improvement of the profession.

This thought, supported by the will to give greater service to the public, was responsible for the direct action taken some five years ago by the Council on Dental Education. This action dictated the selection of a three man Survey Team to appraise the educational set-up of our five dental schools and to investigate the training facilities with a view to increasing our personnel by graduating a larger number of students.

A report of the Survey Team, after their study and evaluation of these



C.D.A. President, Dr. A. J. Coughlan, addressing the Annual Meeting of the Association in St. Andrews-by-the-Sea. Dr. Leslie M. Fitzgerald, President of the American Dental Association (left) was a guest of honour.

schools was received last week. This report, detailed and comprehensive, provides our Association with much needed information for presentation to Provincial and Federal authorities to improve our present standards and teaching facilities.

We are much indebted to this Survey Team comprising Dean A. C. Lewis, Dr. Harvey W. Reid, and Dr. Arthur Walsh for a very excellent report, out of which we are confident much good will come.

It is, as we realize, a physical impossibility for an organization with our numbers to do more than treat a small segment of our population. Any sizeable increase in our personnel for this purpose is many years off, so we must therefore exert every effort and stress the great need for governmental assistance in the field of Research. With greater financial support for the training of both graduates and undergraduate students, plans could be laid for initiating Research projects which would do much to advance the cause of Dentistry.

Research supported by an intensified programme of Dental Education could aid considerably our insufficient personnel.

The scientific discovery of the use of sodium fluoride added to communal water

supplies in its proper proportions has brought about our first ray of hope in the fight to control dental decay. Its use today is past any stage of experimentation and has the backing and support of every Association interested in the health of the public. We encourage you to be leaders in your communities in the promotion of this highly scientific discovery and advocate its immediate use to help arrest the world's most prevalent disease.

No organization can function successfully and carry out a programme of activities progressively without the generous financial response of its membership. I will not belabour you with the reasons for increased support of corporate bodies to further the interests of your Association, but may I remark that the financial status of an organization of some fifty-three hundred dentists leaves much to be desired.

Your Pension Trust Plan requires no further explanation at this time by me, but may I remind you that your Association is vitally interested in its future and is proud of the achievement in presenting it to you.

Your Executive has been considering for some time a Blue Cross Service for the membership and quite recently authorized the administrator of our Pension Trust Plan, Mr. E. L. R. Williamson, to discuss with the Blue Cross officials the possibility of a National Group being formed for the Dental Profession.

I am pleased to announce that the outcome of his overtures was favourable and we now have the Canadian Dental Association National Blue Cross Group, the first National Group with the Blue Cross organization.

Details of the services and costs are now available and I feel certain the contracts offered will prove most attractive to all interested members.

I feel we have reached a stage in the history of our Association when we should be conscious of the need to take a more active part in the dental affairs outside of our own country. This par-

ticular remark has reference to our relationship as a member of the International Dental Federation.

On more than one occasion, the need for greater knowledge of the existing situations relative to dental affairs in other countries has been felt. Aside from this more or less selfish motive, I feel it is in the interests of our Association and the profession generally to lend greater support to the International Dental Federation whose roster comprises representatives of forty-two countries.

Brigadier Wansbrough who represented our Association at the 42nd Annual Meeting of the International Dental Federation held this past June at Scheveningen, Holland, had this to say in the closing remarks of his report, and I quote:

"It would seem that since Canada has the third largest group of dentists in the F.D.I. that more adequate representation should be made at the Annual meeting. As a means of developing international goodwill and advertising the high place that dentistry is accorded in the national life of Canada, there is no better medium."

War Memorial Award—The Winners of the War Memorial essay competition for this year were:

1st Prize: Dr. John H. Weber,
University of Toronto.

2nd Prize: Dr. Wm. P. Hanna,
University of Alberta.

The subject for competition was:

"The Present Status of Dental Focal Infection".

We congratulate these two young men for the outstanding honour which they have merited.

The worth of our profession is not measured entirely by the skill of its members, for in many instances we are judged by our interest and sympathetic understanding to the patients we serve.

We have in the past been neglectful of good public relations and what it means to the profession, but today I believe we are more conscious of the power of public

thinking and how it can affect us generally.

The best Public Relations officer as has been stated is the dentist himself who, by his conduct and example, can do so much to raise public opinion in the profession's favour.

The interest of the dentist in Public Affairs, his leadership in community activities, and his close attention to his professional duties can all do much to carry out and promote the aims of your Public Relations Committee. Their efforts will be in vain unless we give them our continued support and co-operation.

As President of your Association, one gets a closer perspective of the work and accomplishments of our headquarters Staff. There is an ever increasing volume of correspondence and detail brought about largely by an effort to give the membership a more intimate knowledge of your Association.

Provincial organizations and individual members find our headquarters a ready source of much needed information.

Federal and Provincial bureaux are more demanding of facts and figures regarding our profession.

Let us not fail to recognize the worth of this fine and pains-taking group which it has been our good fortune to engage. We are grateful to our Secretary and staff for the high standard of efficiency they have attained.

In conclusion, permit me to thank the members of the Board of Governors, Committee Chairmen and my Executive, for the spirit of co-operation they have shown to me during my term of office.

To our Secretary, Dr. Don Gullett, I offer my appreciation of his generous help to me throughout the year.

For my successor, Dr. P. G. Anderson, popular and capable, let me ask your continued support.

May I again thank you for the great honour you have conferred on me, an honour which I did not seek and may not have merited, but which I shall cherish all the days of my life.

Convention Reflections

The Algonquin, a delightful C. P. R. summer resort hotel on the outskirts of the attractive fishing village of Saint Andrews, made a very fitting centre for the fifty-second annual meeting of the Canadian Dental Association this early September. From the time the convention opened with the usual and traditional musicale on Sunday evening, September fifth, until the closing luncheon at noon the following Wednesday when the members held hands and sang lustily Auld Lang Syne, there seemed to be something to do every minute. The ladies' registration was two-thirds that of the men and considering this was a national meeting it shows many made a holiday of the trip and took advantage of a tour to the Maritimes. As the weather at a resort hotel means so much, it was a pleasure to have the convention timed so nicely between the two hurricanes Carol and Edna. On the whole the sun shone and the air was cool and brisk in the morning only to warm up with the tempo of the day.

The musicale was held in the main lounge of the hotel which was filled to capacity. The artists were recent graduates of the conservatory of music at Mount Allison University. There was one pianist together with a soprano, baritone and accompanist. The vocalists performed both individually and in duet. Judging by the attention and prolonged applause, the artists were of outstanding calibre.

Registration which had commenced on Sunday was continued on Monday morning. There was a total of 258 dentists with 162 ladies, not including the children of all ages who came to enjoy themselves.

Sharp at ten o'clock on Monday morning the table clinicians took over the main floor of the Casino. Every branch of dentistry from orthodontics to endodontics and from prosthetics to operative aids were covered by very well-chosen and able clinicians. It was interesting to see the number who used visual aids in mak-

ing their presentations. At the end of two hours most of the clinicians were quite willing to terminate their presentations and attend the reception prior to the first luncheon.

At the luncheon, the able president of the C.D.A., Dr. Al Coughlan from Saint John, New Brunswick, was the chairman. The mayor of Saint Andrews, Mr. Leigh Williams, gave a few cordial words of welcome from his home town. Then, in addition, the Government of the province was ably represented by the Honourable Norman Buchanan, Minister of Lands and Mines and a veteran who lost both legs in World War II. He gave a hearty welcome on behalf of the province of New Brunswick.

In the afternoon the essayists and clinicians commenced their sessions at the Casino, using facilities on both floors. With the good weather and spacious rooms, air conditioned with the invigorating salt air from the bay, there was always rapt attention. All the essayists and clinicians were briefed to keep to a rigid schedule so that, with the fifteen minute breaks between, it was a pleasure to take in the wide variety of valuable information offered by them. One half of the total twelve essayists and clinicians were from the United States and this gave a balanced programme which was a credit to the careful planning behind the scenes.

The Annual Grieve Memorial Lecture on orthodontics was given at the opening of the essay programme by Dr. Leuman Maurice Waugh, formerly of Columbia University in New York. He is an internationally known orthodontist, an able teacher, and has lived during the period of the first half of this century to see orthodontics advance to the preeminent place it holds today. It was also interesting, and in fact revealing, to learn that Dr. Waugh was born a Canadian near Kitchener, Ontario.

The annual meeting of the C.D.A. was

held in the form of an evening dinner meeting. Again the president, Dr. Coughlan, presided, welcoming everyone and giving an air of hospitality which really keyed the whole convention. The guest speaker was the President of the American Dental Association, Dr. Leslie M. Fitzgerald, an eminent oral surgeon from Dubuque, Iowa. He brought greetings from his association and stressed how fortuitous it was that both Associations should exist in such close harmony. He stated that the credit for this should be directed in the main to the A.D.A. Secretary, Dr. Harold Hillenbrand, and our own Secretary, Dr. Don Gullett.

The new president for the ensuing year, formerly of New Brunswick, Dr. P. G. Anderson of Toronto, was installed in office by ex-president Dr. Harold Cline of Vancouver. Dr. Anderson is held in very high esteem by all who know him.

At the dinner a life membership was presented to Dr. Frank Godsoe of Hampton, the oldest living dentist in New Brunswick and a witness at the formation of the C.D.A. in Montreal in 1902, where he represented New Brunswick. He received the life membership, presented to him by Dr. Coughlan on behalf of the C.D.A. In reply he spoke very fittingly and with no apparent hesitation.

At ten o'clock that evening a very convivial chuck wagon dance was held in the Casino. The decorations gave atmosphere to the function, such decorations including an old stage coach spot lighted at the front door, and inside on the stage beside the orchestra was one of the old-time buggies complete with fringe top.

The next morning, on schedule, clinics started for the second day of the convention. On this day there was no regular scheduled luncheon, and many took advantage to have a round of golf or swim in the ocean at Katy's Cove. In the evening there was the president's dinner and dance with a cocktail party in the main lounge, prior to the dinner. The chairman was Dr. James O'Brien, convention convener, and His Honor the Lieutenant

Governor D. L. MacLaren was the guest speaker of the evening. He welcomed the visitors to his province and told of the many wonders to be found here. He told stories, recited poetry, and delved into the history, including dental history, of N.B. The decorations at the head table were done with a seashore motif and included model ships, lighthouses, fish nets, drift wood, carved sea gulls, and blue violets, the flower of New Brunswick. There was a dance, again at the Casino, which, in spite of the weather, was well attended.

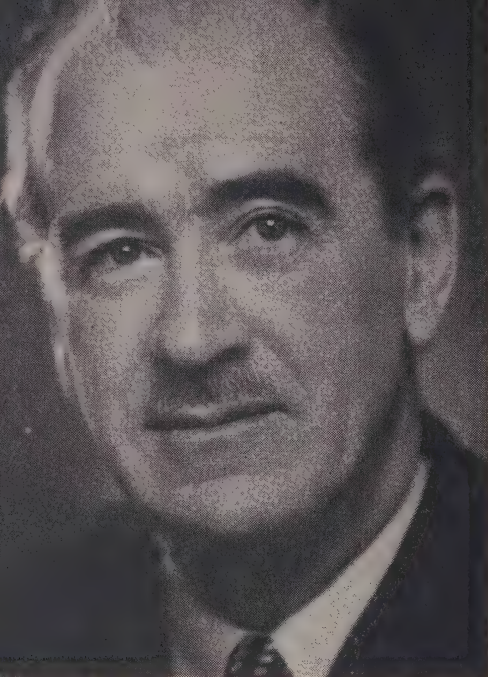
On the last day, Wednesday, due to the gracious agreement of Dr. Stan Bagnall of Halifax, one of the essayists, who allowed the schedule to be shortened, the convention was terminated at the noon luncheon. The vice president of the N.B. Dental Society, Dr. Byngham of Moncton, was chairman and Dr. Robert Langstroth, the director of dental services for New Brunswick, was the able speaker.

At the close of the luncheon, the golf prizes were presented both to the ladies and the men. Lt. Col. H. L. Harris of Halifax won the silver cup for the low gross score. Mrs. J. B. G. Stewart of Toronto won the ladies' event. There were many desirable prizes, among them, besides the silver cups, a silver tray and a table radio.

One of the features of the convention that must be mentioned was the entertainment given the ladies while the clinics were in progress. On Monday morning there was a Sherry Party in the music room where everyone had a chance to get acquainted.

In the afternoon the Honorable Cairine Wilson of Ottawa gave a delightful tea party at "Clibrig", her summer residence. The view and the flowers were only surpassed by the gracious hospitality of the Senator herself. There were about one hundred and eighty guests.

On Tuesday and Wednesday there were coffee parties for the ladies in the morning and tea and bridge in the afternoon. An innovation was the organization of baby sitters so that mothers could attend



Photo—Ashley & Crippen

Dr. P. G. ANDERSON,
President, Canadian Dental Association

At the C.D.A. Annual Meeting at St. Andrews-by-the-Sea in New Brunswick, Dr. P. G. Anderson of Toronto was installed as President for the ensuing year.

Dr. Anderson was born in Port Elgin, New Brunswick, and it was significant that he should be made President in the same Province. He attended Port Elgin High School, the Provincial Normal School at Fredericton, and Mount Allison University at Sackville, N.B. He graduated from the Faculty of Dentistry, University of Toronto in 1928 and has been practising in Toronto since that time. He has fraternal affiliations with Xi Psi Phi and Omicron Kappa Upsilon and is a Fellow of the American College of Dentists.

Dr. Anderson is a Professor of Operative Dentistry, University of Toronto, and in addition to his teaching activities has given innumerable clinics and lectures throughout Canada, the United States and other countries. Dr. Anderson has held executive positions with the Toronto Academy of Dentistry; he has been chairman of the C.D.A. Committee on Publications, the C.D.A. Committee on Group Insurance, and a member of the C.D.A. Board of Governors.

Dr. Anderson is a member of the Senate of the University of Toronto.

CONVENTION REFLECTIONS (Con't)

their day-time parties. There was also swimming, golfing, shuffleboard, and tennis.

A very comprehensive display of arts and crafts was on display and because of the attractive arrangement in the rotunda of the dining room it received much attention and comment.

The exhibitors were on the ground floor at the Casino and their displays received much interest.

All conventions take a great deal of time and effort in respect to their arrangements. The various committees are to be congratulated most sincerely on

their achieved success. Credit for this organization must go in the first instance to the two presidents, Dr. Al. Coughlan of the C.D.A., and Dr. Harry Peters of the New Brunswick Society, as well, of course, as their good wives. The general convenor and master of ceremonies, Dr. Jimmy O'Brien, had possibly the most arduous task in keeping various committees progressing on schedule. He did a masterly job and everyone was most appreciative. Those who came "down to the shore in fifty-four" will have happy memories of a very enjoyable meeting.

John F. Edgecombe.

ABSTRACTS

Oral Hygiene Habits of Young Children

by LILLIAN O. DAHL, D.H., and BEATRICE B. DAVIS, D.H.

Journal of Periodontology, July 1954.

From examining the toothbrushing habits of 514 children, ages 6 to 15 years, the following facts were evident:

1. Parents reported that the most frequent time of brushing the teeth was before retiring and before breakfast. These combined times included over 40 per cent of the children studied. About 5 per cent brushed their teeth three times

daily after meals. 2. Direct observations indicated that the time required to brush the teeth amounted to about 60 seconds in the boys and 70 seconds in the girls. In examining data secured from parents, it appears that the frequency of brushing is about 1.4 times per day for the entire study group. 3. Little evidence was found that indicated an improvement in the oral hygiene of the children brought about by simply participating in a dental caries control programme which stressed toothbrushing. 4. It is suggested that the degree of pigmentation on teeth may be a more satisfactory criterion to indicate state of oral hygiene than the degree of materia alba on the teeth.

Factors to be considered in the control and elimination of chronic tissue soreness beneath dentures.

by HORTON D. KIMBALL, D.D.S., D.D.Sc., Detroit, Mich.

The Journal of Prosthetic Dentistry, May 1954.

The problem of controlling and eliminating chronic tissue soreness beneath dentures may be divided into two broad categories: Mechanical Considerations and Systemic Considerations.

MECHANICAL CONSIDERATIONS:

1. *Relief of Pressure Areas Inside of Dentures.*—By marking the sore tissue regions with indelible pencil, and transferring the marking to the dentures, or by using indicating pastes, soft waxes,

etc., inside of the dentures, the areas of excessive pressure may be determined; the dentures are then trimmed or relieved accordingly.

2. *Relief of Occlusal Trauma and Interference.*—A number of factors must be considered in order to be certain that no occlusal interference or trauma is occurring; any one of these may be sufficient to induce chronic tissue tenderness.

- (a) Spot grinding of the teeth.
- (b) Checking of centric relation.
- (c) Checking of occlusal balance.
- (d) Milling-in of occlusion.
- (e) Checking of vertical dimension.
- (f) Checking of the occlusal plane of posterior teeth.
- (g) Bruxism and bruxomania.
- (h) Use of plastic teeth.
- (i) Use of modified or nonanatomic posterior teeth.

3. *Size of Denture Bases.*—A denture base which covers the maximum available tissue surface is more kind to underlying tissues than the one which does not. With the larger base the stresses are dissipated over a larger area, hence tissue soreness is reduced.

4. *Use of Soft Lining Materials on the Lower Dentures.*—The use of a soft lining material on a lower denture may sometimes contribute a great deal to an individual's being able to wear the denture successfully and comfortably. In time, the tender tissues covering the alveolar ridges gradually change, and develop into a more tough, fibrous, or "calloused" type of tissue which can more comfortably receive the stress of the denture.

SYSTEMIC CONSIDERATIONS:

Some of the systemic factors to be considered are:

(1) drug, antibiotic, and allergic reactions; (2) debilitating diseases; (3) systemic conditions associated with endocrine gland, and blood stream disturbances; and (4) nutritional disturbances.

1. *Drug, Antibiotic, and Allergic Reactions.*—The ingestion of drugs, such as phenolphthalein and other coal tar derivatives, may create disturbances in the oral mucous membrane and in the gingivae. Certain types of lipstick may initiate an oral inflammation. Dilantin Sodium, which has been used in the control of epilepsy, has sometimes been responsible for the production of a marked gingival hyperplasia.

Many drugs act apparently as vitamin antagonists, or antivitamin. Many of these act largely on vitamin C or vitamins of the B complex, and their excessive use can cause a marked deficiency. When this occurs, the results may be a sudden onset of marked tissue soreness beneath the dentures.

Some of the more common vitamin inhibitors are: nicotine, alcohol, acetyl salicylic acid (aspirin), barbiturates, morphine, some of the sulfa drugs and some of the antibiotics, such as streptomycin and penicillin.

2. *Debilitating Diseases.*—Debilitating and wasting diseases bring about abnormal metabolic changes in the denture-supporting structures, and may thus have an adverse effect upon denture retention.

3. *Systemic Conditions Associated with Endocrine Gland Disturbances and Blood Stream Disturbances.*—In women, there is sometimes a condition of osteoporosis which is associated with menopause and postmenopause. In the edentulous woman, such a condition of postmenopausal osteoporosis can readily account for excessively rapid resorption of the mandibular denture-supporting alveolar ridge, and result in chronic tissue soreness.

4. *Nutritional Disturbances and Deficiencies.*—Probably the most obvious oral manifestations of nutritional deficiencies are observed in cases of vitamin deficiencies. Deficiencies in B complex reduce tissue resistance, and can be directly responsible for chronic soreness beneath dentures.

Temporomandibular Joint Pain

by HOMER CREE VAUGHAN, D.D.S.

The Journal of Prosthetic Dentistry, September 1954.

The bulk of temporomandibular cases, of indirect traumatic origin, can be divided into two pathological categories: (1)

those occurring within the joint structure including contusion, osteo-arthritis, and occasionally rheumatoid arthritis in this order of frequency, and (2) those occurring periarticularly with functional alterations of the external pterygoid muscles. The two categories may occur solely or concomitantly.

The temporomandibular joint is extremely flexible and normally is the

victim rather than the active guide of the opening tilt. This joint and the external pterygoid muscle, when injured or strained, create an area of hyperesthesia or oversensitiveness and are capable of producing psychogenic disturbances.

The degree and chronicity of the involvement depend upon the nature of the injury to the external pterygoid muscle, probably the superior fasciculus of this muscle. The initial injury can arise from compression by the condyle head, either in an anterior glide, lateral rotation, or during the opening tilt, or to an injury, strain, or fatigue within the external pterygoid muscle. The nature of the problem is different with a posteriorly displaced condyle, which produces more tearing, than with a condyle in an anterior position, which is a compression problem.

Any diagnosis of temporomandibular

complaints must start at the level of the joint itself, and not at the level of the dental arches. There are other causes of pain in this area, such as constitutional, the external acoustic meatus, fluid collecting in the infratemporal fossa, the coronoid process, and the posterior and insertion fibers of the temporal muscles. Any one of these could be the sole cause for pain in this area.

While occlusal therapy is still our most effective measure, it is apparent that we must use other aids in some of these cases. For example 2 per cent Novocain may be used as a therapeutic aid and to help differentiate the psychogenic cases. More recently hyaluronidase has been used, and Hydrocortone in well-selected cases. Injection therapy can be an important adjunct, but it should not be used empirically.

The advantages and disadvantages of the use of antibiotics in Endodontics

by I. B. BENDER, D.D.S., and SAMUEL SELTZER, D.D.S., Philade'phia, Pa.

Oral Surgery, Oral Medicine and Oral Pathology, Sept. 1954.

The introduction of the use of antibiotics in endodontics has produced the following advantages:

1. They are able to destroy the bacteria in the root canal and not injure the cells of the periapical tissue.

2. Combinations of antibiotics result in more powerful bactericidal action against certain organisms because of an additive and/or synergistic action.

3. As a result of the use of combinations of antibiotics and fungicides, sterilization treatment time has been appreciably reduced. Also acute conditions can be treat-

ed at the first sitting and the canal sealed.

4. Rapid sterilization cannot be ascribed only to the effect of antibiotics upon the bacteria; the power of penetration of these substances is important. It has been shown that when Grossman's antibiotic mixture was sealed into the root canal of an extracted tooth, a zone of inhibition was produced around the tooth when it was placed on an agar plate seeded with different organisms. Presumably, the antibiotics diffused through the dentine and cementum.

5. There is a clinical impression that a more rapid healing and repair of bone defects in cases of chronic and acute abscess take place with antibiotics than with the use of other drugs.

Disadvantages also must be evaluated:

1. No single antibiotic by itself will sterilize the root canal in every instance, because each antibiotic has a specific and limited antibacterial spectrum.

2. Organisms are constantly undergoing mutations, thereby producing resistant strains. The development of resistance, however, can be overcome if antibiotics are used in combination. The bacteria can develop a resistance to one antibiotic but not to all.

3. Sensitivity reactions can occur during, within a few days of, or as late as two weeks following administration of penicillin. Systemic reactions sometimes develop several weeks after therapy.

4. The antibacterial activity of the antibiotic is transferred to the culture broth

by means of paper point in taking the culture. Inasmuch as inactivators have not yet been developed for certain antibiotics which are used in endodontics, the validity of the negative bacteriologic culture becomes questionable.

Small traces of the antibiotics, particularly when used in combinations, may produce a growth inhibition in the cultural tube.

Negative cultures obtained following antibiotic treatment must be regarded as questionable in 13 per cent of the cases.

An improved intracoronar method of intermaxillary fixation

by STERLING G. MEAD, D.D.S., GEORGE D. SELFRIDGE, D.D.S., and HOMER S. SAMUELS, D.D.S.,
Jacksonville, Fla.

Journal of Oral Surgery, July 1954.

An intracoronar method of obtaining fixation for intermaxillary reduction and immobilization is practical and desirable in selected cases. The main advantage of the technique is the ease and rapidity with which an intracoronar pin can be utilized for certain fractures of the mandible and the maxilla. This procedure consists of the following steps:

1. The tooth (or teeth) with the greatest positional advantage for reducing the fracture or fractures is selected.

2. With an inverted cone diamond stone, a small niche is broken in the enamel at the junction of the middle and cervical thirds of the buccal surface of the tooth selected.

3. Next, with a No. 701 tapered fissure carbide bur, a hole is drilled perpendicular to the long axis of the tooth for a distance of 1.5 mm. The distance can be

marked or gauged on the bur for accuracy. This depth is sufficient at the site suggested for the retention of gold pins and yet allows for a margin of safety in any adult tooth.

4. A No. 18 gauge gold alloy wire has already been cut and bent to form a tiny hook. This hook is exactly the right size to fit the opening of the No. 701 bur hole snugly. The hook is inserted into place under pressure with a pair of pliers or a hemostat. Each tooth is prepared in the same manner.

Rubber loops are passed around the inserted pins for traction and immobilization in exactly the same manner as this step is carried out in other methods. At the close of the procedure, the gold pins can be cut flush with the enamel and smoothed with a stone bur and other burnishers to the desired finish; or if the pins are found to be insecure when the ligatures are removed, they can be taken out, and the cavity can be enlarged to receive any of the conventional filling materials. Then the polishing is done in the usual manner to obtain the necessary surface finish. The end result is a very small, accurately fitting inlay, amalgam filling, or silicate restoration.

The Treatment of Dentine before Insertion of Restorations

by H. A. ZANDER, M.S., D.D.S.

International Dental Journal, September 1954.

Three factors must be considered in the treatment of dentine before insertion of restoration; cavity sterilization, pulp and dentine protection, and dentine treatment with "primers" or "adhesives."

It is the author's conclusion, based upon our present-day knowledge, that cavity sterilization is still an empirical procedure. There are indications that the application of certain sterilizing agents may actually be detrimental.

Dentine protection is possible against

the phosphoric acid in various cements by the use of calcium hydroxide-containing liners. There exists as yet no material which in itself seals dentine tubules. However, many drugs are capable of reducing dentine sensitivity. Their use is recommended as long as this is not confused with dentine protection.

"Adhesives" and "primers" are newly developed solutions for the treatment of dentine before insertion of resin filling materials. Their exact mode of action is still unknown.

There exists a need for research toward solutions which can provide a definite dentine seal and for substances which may bond filling materials to dentine structure.

Some Observations on the Cleansing Effect of Nylon and Bristle Tooth Brushes

by M. KIPLINGER HINE, Jr., CARL WACHTL, and L. S. FOSDICK.

The Journal of Periodontology, July 1954.

The cleansing efficiency of tooth brushes is extremely difficult to measure, but it may be possible to measure certain factors so that comparative data may be indicative of relative efficiency. The cleansing of the teeth by brushing entails the removal of debris from rather smooth, hard surfaces. Many tests indicate that the natural bristle seems to facilitate the removal of soft or hard debris much better than does the more durable nylon filament.

Of the many tests invoked, probably the most significant and readily duplicated is the measure of the drag. It is quite possible that this could be standardized

as drag per unit area of bristle surface with constant weight, and these data may serve as a standard for the profession and manufacturers.

A study of the results of these tests indicates:

1. Nylon displaces or pushes aside soft, homogeneous material, such as emulsion on photographic film and heavy oil paint; natural bristle apparently grips and pulls off the soft material.

2. During use, nylon filament apparently wears smooth and glides over the test surface, while the bristle continues to grip the surface.

3. Under comparable conditions the quantity of material removed by natural bristle brushes was usually notably greater than the amount removed by nylon filaments.

4. Although final conclusions cannot be made on the basis of these preliminary studies, the experiments suggest that the natural bristle brush cleanses more efficiently than one with nylon filaments.

RESEARCH

FOREFRONT OF CANADIAN DENTISTRY

Studies in the regeneration and reattachment of the supporting structures of the teeth

by W. J. LINGHORNE, D.D.S., Banting and Best
Department of Medical Research

STUDY I

This paper deals with the study of reattachment of soft tissues detached from the teeth. Reattachment is one phase of a larger problem, that of regeneration of the supporting structures of the teeth lost during the course of periodontal disease.

PROCEDURE

The experimental animals were dogs with healthy gingival tissues. Only the four canine teeth were used. By means of a disc stone, a groove was cut into the tooth approximately 1 mm from gingival margin. This groove served as a point of reference from which the level of the gingival sulcus or pocket could be measured. Thus it was possible to obtain accurate data on the gingival recessions and of reattachment of the gingival flap. A gingival flap was made exposing the overlying alveolar bone, care being taken to detach the complete periosteum including the inner or cambium layer. Then a section of bone and periodontal membrane approximately 7 x 6 mm was removed exposing the tooth. The flap thus detached measured approximately 9 mm

from the bottom of the gingival sulcus, or 12 mm from the groove in the tooth. In some cases the tooth was scaled; in others, no scaling was done. The flap was sutured into place.

By means of a graduated probe the level of the bottom of the gingival sulcus was measured from the gingival mark on the tooth before operation and again at the end of the healing period. Nineteen upper and seven lower teeth were used in this phase of the study. The animals were sacrificed at various intervals from 5 days to 1 year and blocks were removed for sectioning. The oldest animal described in this paper was sacrificed 49 days after operation.

OBSERVATIONS ON THE LIVING ANIMAL

In the upper teeth when measured by a probe, 6 to 8 mm of reattachment appeared to have occurred in the great majority of teeth, when the healing period exceeded 18 days. Before that period had elapsed, sufficient pressure could not be exerted on the probe to determine whether attachment had taken place, without the risk of tearing the healing wound. After the eighteenth day the wound appeared to have healed and the gingiva had resumed a normal appearance. Usually 1 to 3 mm of recession were found. The lower canines ended with little attachment to the tooth, 1 to 3 mm, and with the formation of a true epithelialized pocket. Often there was considerable re-

cession, the pocket depth being related to the amount of recession. The gingiva did not regain the normal appearance as did the gingiva in the mapilla.

HISTOLOGIC OBSERVATIONS

Reattachment of approximately $\frac{3}{4}$ of the detached gingiva by means of new cementum occurred in the great majority of the upper canines. Most of the old cementum and part of the dentine on the denuded root was resorbed. New cementum was observed to be laid down on the old cementum or directly on the dentine. In the reattached gingiva, the connective tissue fibres run in a direction parallel to the tooth rather than in the characteristic oblique or horizontal direction. The oral epithelium appeared to proliferate and cover the detached gingiva when attachment fails but not when it takes place. A very small amount of regeneration of the bone was observed. Reattachment could be determined microscopically as early as the 17th day and

definitely determined in the living animal by the 25th day of healing.

CONCLUSIONS

1. In dogs, following the surgical destruction of a section of the periodontal membrane and alveolar bone, connective tissue reattachment of the gingival tissues to the tooth by a deposition of new cementum was repeatedly obtained.
2. Uneven resorption of both cementum and dentine may take place prior to cemental apposition.
3. New cementum may be laid down on the old cementum or directly on dentine.
4. In the reattached gingiva, the connective tissue fibres run in a direction parallel to the tooth rather than in the characteristic oblique or horizontal direction.
5. The oral epithelium appears to proliferate downward, when reattachment fails but not when it takes place.
6. Some regeneration of alveolar bone occurred.

Dental caries prevalence in three Idaho communities

by KATHLEEN O. PORTER and ELLA WOODS

Journal of Dental Research, Vol. 33, No. 4, August 1954.

Dental examinations, including posterior bite-wing x-ray films, are reported for 215 children, 15 and 16 years of age, in three Idaho communities; Coeur d'Alene, Boise, and Nampa with 0.0, 0.5 and 1.5 p.p.m. fluorides respectively in their municipal water supplies.

The subjects who were continuous urban residents of Nampa averaged 24%

fewer DMF teeth, including x-ray findings, than the corresponding Boise group, but with the number of subjects available for this study the difference was not statistically significant. The average caries prevalence for the Coeur d'Alene group was more than twice that of the Boise and Nampa groups, and was higher than that for any comparable group reported in the literature. In addition to the lack of fluorides in the water, other factors which may be involved in the severe dental health problems in the Coeur d'Alene area are the lack of minerals in the water and soil and climatic conditions.

Surfaces of enamel, treated in various fashions, were continually subjected to applications of acid, and the rate of decalcification was estimated.

There is some evidence that the enamel of unerupted teeth is more soluble than that of erupted teeth.

As a general observation, the external layers of enamel are less soluble than the corresponding subsurfaces.

It is suggested that this relative insolubility indicates the existence of a hypercalcified zone of enamel at the external surface.

H. R. Sullivan, D.D.Sc., *Journal of Dental Research*, August 1954.

EDITORIAL

Increased Training Facilities — an Urgent Need

In Canada, there is a recognized need for an increase in teaching facilities for dentists and dental hygienists. At the present time, the five dental schools are capable of graduating approximately 212 dentists per year, provided, of course, that all who commence their university dental instruction are able to terminate their courses successfully.

The number of graduating dentists in 1954 exceeded by 83 those who were removed from the profession by retirement or death. The previous year showed a net increase of 144. However, the tremendous rise in the Canadian population figures resulted in a worsening ratio of patients to dentists in each successive year.

Dental associations, a short time ago, were taken to task by the lay press for their alleged lack of interest in the provision of more dental schools and thus a greater number of graduates. One newspaper commented as follows: "It does not look as though the dental associations are putting much pressure on the provinces for action. A short supply of practitioners, of course, means more work and higher earnings for those in any profession. But many dentists are overworked; and in any case professional ethics should require their associations to put the public interest ahead of selfish considerations."

It is absolutely incredible how much muddled reasoning can be included in one paragraph. The statement begins with an assumption (which must be apparent by the conditional nature of the sentence) and then tends to develop conclusions based upon something which is not factual. If the editorial writer had any knowledge of activities in this field, he would have known that the profession has a long history of effort directed toward the establishment of increased training facilities. If the newspaper in question were not implying that the profession was not concerned with the public interest, at least the inference is apparent.

More specifically, the profession has been queried on many occasions why it should so forcefully direct its activities to the prevention of conditions, from the treatment of which the members derive their livelihood. Here there is an intrinsic professional and moral responsibility which forms a part of our code of ethics.

Section VIII, paragraph (b) of the excellent booklet prepared by the Committee on Ethics of the Canadian Dental Association, *A Guide to Professional Conduct*, states as follows: "In his relationship to the public every dentist should realize the preventive as well as the restorative aspects of his profession, and should seize upon such opportunity as may be presented to educate the public in the aims and desires of our profession, that the general dental health of all may be bettered."

No group understands any better the urgent need for more dental schools than the Canadian Dental Association. At the recent Board of Governors meeting, the Association once more reiterated its position in respect to an increase in teaching facilities. Although the resolution was published in toto last month, it may be well to restate it in order that there can be no doubt of the Association's position:

"Whereas an acute shortage of dental personnel exists in Canada, and,

Whereas the teaching facilities in Canada have not been expanded for many years and are inadequate to graduate sufficient personnel to meet the present and increasing need of the public for dental services, and,

Whereas, we believe that there is an urgent and immediate need for more dental

personnel in established government services, and,

Whereas, no increase in the number of graduates could be anticipated from enlarged teaching facilities for a period of five years, and,

Whereas the responsibility for the provision of increased facilities rests upon governmental and university authorities, therefore be it

Resolved that this Association use all available means to further the securing of expansion of teaching facilities for the training of dentists and dental hygienists in order to meet this growing need."

According to the recent Economic Survey of Canadian Dentistry conducted by the Canadian Dental Association, which, incidentally, will be reported in serialized form in future issues, Canadians spend annually about \$70,000,000 for dental services. As this figure relates only to the 35% who receive dental care, one does not have to be a mathematical expert to determine the financial outlay required for all our citizens. As a profession we should be somewhat more than dishonest if we stated that all persons who seek dental care receive a complete service. Therefore we are unable to estimate those whose entire dental requirements still remain undischarged. Many children require orthodontic and preventive orthodontic service, and the prosthetic, periodontal and operative needs of countless adults continue to be unmet. As stated previously, no one is more aware of the problems which are attended with an inadequate personnel than the members of the dental profession.

Governmental agencies and university authorities should give serious consideration to the necessity for establishment or expansion of teaching facilities within their jurisdiction. The need for provision of dental treatment in many parts of Canada is desperate, and the situation therefore requires action at the earliest possible moment.

Book Review

Practical Full Denture Prosthesis, by Joseph S. Landa and two contributors. Second Edition. Five hundred and one pages with two hundred and twenty illustrations. Index. Price \$9.00 (in U.S.A.). Brooklyn, Dental Items of Interest Publishing Co. 1954.

The first edition of this book was a splendid text and soon became popular in many dental schools. The second edition contains five new chapters which are very valuable additions.

The added chapter on "The Troublesome Transition From A Partial Lower To A Complete Lower Denture" is must reading.

The new chapter on "The Freeway Space" is very thorough and enlightening.

"The Temporomandibular Joint as Viewed From the Standpoint of Prosthetic Occlusion" is the subject of another new chapter and covers the most recent thinking on this subject.

Clyde H. Schuyler has written an article on "Fundamental Principles in Correction of Occlusal Disharmony, Natural and Artificial." This outstanding authority makes a very valuable con-

tribution which will appeal to all students of occlusion, whether as prosthodontists, periodontists or general practitioners.

Chapter XXVII is written by Raymond J. Nagle and is a twenty-three page study of Denture Problems. It is well done. All of the most common (and some uncommon) difficulties are covered in detail and their treatments suggested.

The author also has a chapter on "Trouble Shooting" (written in question and answer style) which ranks high in the literature on this subject. There are additional chapters on "Burning and Dry Mouth," "Sense of Taste," "Gagging", which are very practical.

There are three chapters on many types of impressions and the section on Balance is excellent and up-to-date.

Of course, the author is a prosthodontist and teacher of many years' experience. This has helped him to write a text which is practical and extremely usable.

In this reviewer's opinion, this edition cannot be recommended too highly. W. D. Clark

The Association

Honorary Membership Conferred:

Dr. Frank A. Godsoe, the oldest and a very respected member of the dental profession in the province of New Brunswick, had honorary membership in the Canadian Dental Association conferred on him at the Annual Association meeting.

Dr. Godsoe was born in Saint John, N.B., on January 15th, 1862 and has had a long and distinguished career. First he worked as a newspaper reporter for the Evening Globe of Saint John. In 1880 he became apprenticed to Doctor Griffith, an early dental practitioner in Saint John. Later he studied dentistry at the Boston Dental College, graduating in 1883. After practising in Boston for a year he returned to Saint John where he practised all his life, retiring a few years ago. During the First World War Dr. Godsoe served in the Dental Corps.

For 40 years Dr. Godsoe served as Registrar and Secretary of the New Brunswick Dental Society. In conferring this honour on him, President Coughlan said he was one of the true fathers of Canadian Dentistry. He has been the recipient of many fraternal honours. Since retirement his residence has been at Hampton, a few miles out of Saint John.

High-Lights of the 1954 Annual Meeting

—Dr. R. R. McIntyre of Calgary, Alberta, was elected President-elect.

—Winnipeg was selected for the 1957 Annual Meeting. The Meeting will be held in June. Exact dates will be announced later.

—the survey of dental schools was extended for a period of two years.

—policy in favour of the fluoridation of communal water supplies was reaffirmed, —a gavel representing all parts of Canada was presented to the Association. The gavel is made of historical pieces of wood supplied by each respective province.

—emphatic resolution stating need for increased teaching facilities was adopted.

—National Blue Cross Plan for C.D.A. members announced.

—added commendation for the C.D.A. Pension Assurance Plan.

—recommendation to local societies for action in recruitment of suitable dental students.

—endorsed the publication of results of 1954 economic survey.

—authorized the appointment of a committee to inquire into certain inequities existing among those members employed in the field of dental public health.

—authorized the publication in the Journal of decisions of the Ethics Committee as made.

—directed that a firm of economic analysts be chosen to give study to the economics of dental practice.

—adopted new policy statements on pre-payment and post-payment plans for dental service.

—approved a new policy statement on industrial dentistry.

—endorsed the work of the International Dental Federation.

—approved the establishment of a teacher training course for members of faculty staffs.

—decided to issue an invitation to the American Association of Dental Schools to meet in Canada.

—commended the action of the Alberta Dental Association on holding a dental health week during 1954 and encouraged other provinces to do likewise.

—adopted with enthusiasm the progress report on studentships in developing personnel in the research field and approved continuance of the programme.

—approved the principle of licensure of technicians provided the proposed legislation is in harmony with ethical dental practice.

—recommended a study of the relation-

ship between hospital dental services and dental education.

—adopted a resolution designating the term "Oral Surgery" as the connotation of the said practice.

—programme for education of members on organized dentistry approved.

—authorized the development of information packets for use of writers and speakers.

—approved submitted by-laws for the Section on Oral Surgery (Canadian Society of Oral Surgeons).

—Dr. Leuman Waugh of New York gave the Grieve Memorial Lecture.

—Dr. Leslie M. Fitzgerald, President, American Dental Association, attended the Meeting as Official Representative of the said Association.

Facts on Fluoridation

The revised edition of this publication is available. Single copies — free. Quantity rates — 25 cents per copy. The demand for this book has exceeded expectation. Quantity orders will be filled as rapidly as possible.

Fluoridation Notes

—fluoridation programme inaugurated by 1000th U.S. community at Osawatomie, Kansas.

—U.S. population now served by fluoridation is stated to be over 18,000,000.

—in June last fluoridation was approved in the second largest city on the continent, Chicago.

—respecting some statements made by anti-fluoridationists, Dr. George F. Lull, Secretary, American Medical Association recently stated in a letter, "No matter what words were used, the endorsement is that public water supplies should be

fluoridated in order to prevent dental caries in children."

—Woodstock is the first municipality in the province of New Brunswick to adopt fluoridation.

—in Saskatchewan the municipalities of Regina, Saskatoon and Prince Albert will vote on fluoridation on November 3rd.

—Toronto delays action awaiting statement by Ontario Department of Health—experimental fluoridation programmes are to be started in England at Anglesey, Darlington, Kilmarock and Watford.

—at the request of the Canadian Federation of Mayors and Municipalities, the Health League of Canada sent letters to 76 University heads of departments of preventive medicine. Of the 76 replies not one opposed fluoridation. 69 gave emphatic approval; six declined to express an opinion and one suggested caution but said he was not opposed.

—Canadian Medical Association fully endorsed fluoridation at their Annual Meeting in June.

—1954 report of Dental Division of Department of National Health and Welfare has been issued as of Sept. 1, stating a continuation of the same favourable trend as contained in reports of preceding years.

—Yorkton, Saskatchewan voted on fluoridation, September 10th. The vote was small and fluoridation was defeated.

Fellowships of National Research Council

Copies of the Announcement, Regulations and Application Form for N.R.C. Fellowships are available and may be obtained by writing: Canadian Dental Association, 234 St. George St., Toronto. Closing date for applications is February 1, 1955.

The practice of dentistry raises frequent questions of general medical assessment. If certain of the major issues are remembered the need for special assessment will not be overlooked, and as the dentist is in this respect only a court of first instance, he will find in the family doctor a colleague with whom he can, when necessary, form a joint opinion. It is, indeed, only in this way that the community will derive the maximum benefit from the health services.

R. W. M. Strain, B.Sc., M.D., F.R.C.P.I.,
The Dental Practitioner.

Committees and Councils

Public Relations.

Public Relations—The present day concept of this term means the opinion of an organization, held by the general public. Public opinion is inclined to be more critical of a profession than say, an industrial company.

The reputation of each individual dentist is reflected upon the whole profession. If you are held in high regard in your community, the entire profession is more likely to be looked upon with favour. This in effect makes every dentist a Public Relations Officer.

It is the purpose of the Public Relations Committee to enhance the good relations already existing between the public and the profession of dentistry, to make dentists conscious of their obligations to be good citizens as well as responsible practitioners.

A good example of service to the public was a Television programme last winter on the subject of fluoridation. Dr. Don W. Gullett was interviewed by a panel of reporters, one of whom was our editor, Dr. Wesley Dunn. Many favourable comments were received upon this public service project.

Last year, under the chairmanship of Dr. L. M. Grose, the committee was responsible for favourable press notices

upon various aspects of dentistry. These notices had they been charged for at prevailing display rates would have cost the Canadian Dental Association nearly five thousand dollars.

"Health," the official organ of the Health League of Canada, publishes an article on dental health each issue. Other periodicals carry articles of a similar nature from time to time, i.e. the October 1954 issue of the Canadian Home Journal has a story about Orthodontics. We hope to supply a reprint pamphlet to every member of the Canadian Dental Association.

From time to time letters on Public Relations are sent to all the members with the hope that they may become more familiar with the problems facing dentistry.

These are among the means employed by the Public Relations Committee to obtain favourable thinking about dentistry.

The people of Canada are more aware of dental problems now than ever before. It is our duty as well as in our best interest to see that they receive nothing but authentic information, presented in such a manner as to do credit to the dental profession.

The Public Relations Committee earnestly solicits your sympathetic understanding and co-operation.

Harold Skilling, Chairman.

The Library

Additions

- ALVAREZ, W. C. The neuroses; diagnosis and management of functional disorders and minor psychoses. 1951. 667p.
BELLAK, L. Psychology of physical illness. 1952. 243p.
BERGMAN, G. The caries inhibiting action of sodium fluoride. 1953. 112p. illus.
BJORLIN, G. The influence of local anaesthetics on living tissue in white rat. 1954. 112p. illus.
BONICA, J. J. The management of pain. 1953. 1533p. illus.

- BUNTING, R. W. Oral Hygiene. 2nd ed. 1954. 283p. illus.
GROUT, R. E. Health teaching in schools for teachers in elementary and secondary schools. 2nd ed. 1953. 353p. illus.
HADFIELD, G. Recent advances in pathology. 1953. 374p. illus.
HULT, S. Factors influencing the efficiency of dental local anaesthetics in man. 1953. 79p. illus.
KLEINSCHMIDT, H. E., and ZIMAND, S. Public Health Education; its tools and procedures. 1953. 302p. illus.
LEE, J. A. A synopsis of anaesthesia. 3rd ed. 1953. 483p.
MEAD, S. V. Oral surgery. 4th ed. 1954. 1478p. illus.

Economic Security

Basic Investment for the Professional Man

By E. L. R. WILLIAMSON, M.B.E., B.P.A., F.R.E.S.

Consulting Economist and Administrator
of the C.D.A. Plan

Investment may be defined in its broadest sense as savings (See Article I in January issue) made in such form that not only are the original savings, or principal, intact when required at a later date, but that they are augmented by the product of the savings at work—interest.

“Capital gains” are not the product of “investments” in the sense of this definition since the gain is dependent upon factors other than the normal productivity of the capital involved, and the gain is far from guaranteed; indeed, if the gain is to be appreciable, there must be at the outset a substantial chance of a “capital loss.”

Since the professional man is in a more economically exposed position than any other (See Article VIII in the August issue), it is of the essence for him that his basic savings be in a form providing complete security as to principal and earning as high a rate of interest as is compatible with that safety.

A man commencing to receive \$100.00 per month at age 65 will, on the average, receive \$19,740.00 before his decease. If he commenced his savings at age 30, but earned no interest at any time through the period, he would have to save \$621.15 annually to provide this income. We are, for the moment, neglecting the fact that he is *just as likely to live longer than his normal life expectancy* of 16.45 years at age 65 as he is to live a lesser period, and that if he lives longer, he will require more than \$19,740.00.

If, however, our man can earn 3% simple interest throughout the period, and save every penny of it, he will need to set aside only \$371.00 annually.

If he can reinvest the interest earnings and thus obtain compound interest, he can reduce the annual savings required yet further, but since the interest earnings will be too small in the early years for immediate reinvestment until he has accumulated a sufficient amount, and since he will not be able to find market conditions favourable at any given moment, he will not be able to secure full benefit of compounding. If it be rather generously assumed that he can compound his interest two-thirds of the time, he can reduce his annual savings to approximately \$316.00 annually over the thirty-five years.

But if he works to the same end through assurance, he will obtain the full benefit of complete and automatic compounding of interest throughout the whole period—both before and after retirement age, with the result that he can reduce his annual savings to \$263.30 annually. This is the equivalent of simple interest earnings, as described earlier, of 5½%.

The four methods may be graphically represented in fig. 1.

It should be observed that *all four* methods require unflinching adherence to the savings schedule and that no interest earnings shall at any time be diverted or otherwise employed, even temporarily. Experience has proved that such is very difficult with voluntary savings, and that for the great majority, a system of “forced savings” such as that provided by assurance is the only method which will in fact achieve the desired result.

Attention is called to the fact that all of the four methods described assume the exhaustion of principal *and* interest over the period of normal life expectancy. In order to achieve the income of \$100.00 monthly, yet keep the principal intact, would require an increase in the basic savings of 250% annually.

We now come to the point concerning a man's normal life expectancy of 16.45

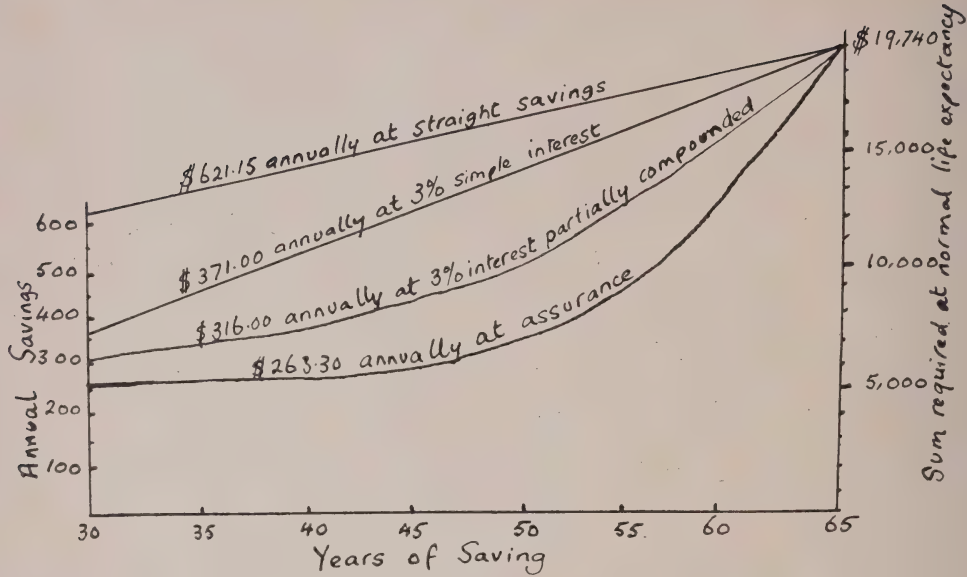


Figure 1

years after age 65. The "norm" is by definition the halfway point: As many men will live longer as those who live less than that number of years. Statistically, a man is not certain to be dead until he has attained the age of 109½ years. For the half that live longer than 16.45 years, the first three methods of saving are inadequate and leave him destitute at an advanced age.

Thus assurance alone will actually meet the need for retirement income since it is inexhaustible as well as requiring a smaller annual saving throughout the years of professional practice.

Thus far we have not considered the effect of taxation and its most important bearing on investment. This will be considered in the December Article.

The Corps

Brigadier E. M. Wansbrough attended the Eastern Ontario Dental Association Meeting held in Kingston from 19—21 September.

Majors G. C. Evans and A. T. Roger presented table clinics at the E.O.D.A. Meeting. Major Evans presented a clinic entitled "Tailored Matrices for Class 2 Amalgam Restorations" and Major Roger's clinic was entitled "Lesions of Oral Structures".

Majors R. E. Brown and J. G. Butler are attending a three - month postgraduate course at the U.S. Naval Dental School, Bethesda, Maryland. Major Brown is at-

tending the Operative Crown and Bridge Course, and Major Butler the Complete and Partial Dentures Course.

Capt. H. R. Kettlys has been promoted to the rank of Major. Major Kettlys, 32, was born in Hanna, Alta. He served in the R.C.A.F., in Canada and Overseas, as a Navigator from 1942 to 1945, retiring with the rank of Flying Officer. Major Kettlys attended the Faculty of Dentistry, University of Alberta, and as an undergraduate was appointed 2/Lieut. in the R.C.D.C. in September 1949. On graduation in 1950, he was appointed Captain and has served in

No. 11 Coy. R.C.D.C. Edmonton, and the Far East. Major Kettys is currently attached to No. 11 Coy. and is serving on H.C.M.S. "Ontario".

Capt. J. P. R. Guay, who was released from the R.C.D.C. in June has recently been re-appointed to the Corps.

The following officers have been released from the Royal Canadian Dental Corps:

Capt. D. C. Elliott
 Capt. J. Vincelli
 Capt. J. V. P. Chatwin
 Capt. W. R. Paige

Capt. H. J. Chartrand
 Capt. J. E. Graff

R. C. D. C. Association

Lt.-Col. H. R. McLaren of Ottawa was elected president of the **Royal Canadian Dental Corps Association** at the organization's seventh annual meeting held in Montreal. Lt.-Col. J. E. Merritt of Halifax was elected vice-president, Lt.-Col. D. W. Henry of Montreal second vice-president and secretary, and Lt.-Col. G. K. Clark of Ottawa, treasurer.

The Provinces

Quebec

The first general meeting of the **Mount Royal Dental Society** for the 1954-55 season was held on Tuesday evening, September 21 at the Mount Royal Hotel. Dr. I. B. Hyams presided.

Following the business portion of the meeting, Dr. R. M. Wiener, a member and past-president of the Society, Lecturer in Pathology and in Oral Surgery at McGill University, presented a very informative paper on 'Oral Pathology'.

In describing the lesions of the soft tissues, Dr. Wiener pointed out the ectodermal origin of both the mucous membranes of the mouth and the skin. Consequently, they are subject to many of the same disorders, and the dentist may render a great service to the patient by noticing some of the serious conditions that have oral manifestations.

The first group of disorders to be described by Dr. Wiener were tumors. These included fibromas, mixed cell tumors and giant cell tumors. Although these are benign, surgical removal is advisable as they ulcerate from trauma.

Oral manifestations of carcinoma were then discussed. The clinical picture of this condition was carefully pointed out and certain considerations of dental treatment for a person suffering from this disease in other locations in the body were mentioned. Dr. Wiener warned that dento-alveolar metastasis from some other sight may be brought on by dental surgery, if the patient is known to have had carcinoma in some other organ. Conservative dental treatment of these patients is warranted.

The same consideration should be given a patient who has had a course of radiation therapy directed towards the mandible. Healing is very poor after this therapy, and so dental extractions are to be avoided if at all possible until six months to one year have passed. An osteomyelitis may result from dental surgery during the period of radiation therapy. Dr. Wiener suggested that any dental extractions required by the patient be performed prior to the x-ray treatment.

Other disorders of the oral mucous membranes were described. The more benign ones such as leukoplakia, stomatitis nicotinus, and herpes labialis were discussed first. Then the more serious oral lesions of pemphigus, Addison's disease, the blood dyscrasias and lues were described from the standpoint of their clinical presentation to the dentist. Dr. Wiener also pointed out the damage to the mucous membranes and papillae of the tongue that may result from excessive, prolonged use of mouth washes containing oxidizing agents.

The entire presentation by Dr. Wiener was illustrated by a most informative group of coloured slides, ably projected by Dr. S. Silver. Dr. H. Caplan expressing the sentiments of the Society, thanked the speaker for his excellent paper and presented him with an art volume as a token of the members appreciation.

A. J. C.

The **Montreal Dental Club Fall Golf Tournament** took place in September at the Rosemere Golf and Country Club. The golfers were fortunate in having one of the

finest days this Province has witnessed this summer.

With such an excellent medium the defending champion Dr. Roy Dohn had little trouble disposing of any serious contention. The surprise dark horse of the afternoon was Dr. Tommy Postans who eliminated his most serious contender Dr. Doug Armstrong in a very close battle for the low net honors. However in the foursome ahead of this group another serious competitor and an outstanding golfer came through for the second low net honors; his name: Dr. Bob Harvey. The second low gross went to the only member of the club who has won the Dr. Arthur Walsh Trophy — Dr. Arnold Mitchell.

The golfers closed off their afternoon with a wonderful dinner with very few speeches. Dr. Frank Edward, the Club President, handled this task very ably. A welcome change to the old standbys was the presence of members of the Association Dentaire. We were very pleased to see them.

P. A. L.

The Montreal Branch of **The American Academy of Dental Medicine** held its annual week end meeting in the Laurentian Mountains during the month of September. . . .

The first monthly meeting of the **Montreal Endodontia Society** was also held the same month. . . .

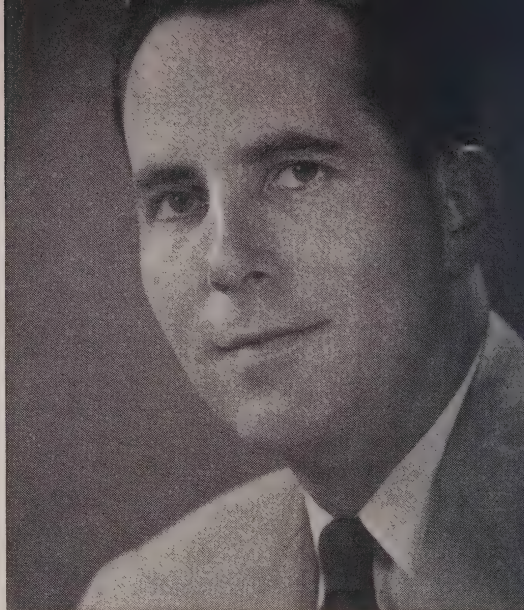
Report of both meetings will appear in the next issue of The Journal. R. F. H.

Nova Scotia

Dalhousie University Dental School has the unique distinction of having the youngest Dean of any School in Canada, in the person of Dr. James D. McLean.

Dr. McLean, who was born in Regina, Sask. in 1920, comes to Dalhousie University well qualified for the position and with a fine scholastic record. He first came to Dalhousie in 1953 from the University of Alberta, where he was professor of Crown and Bridge and at Dalhousie became full time professor of Dentistry.

His loss was keenly felt by his confreres at the University of Alberta, where he showed excellent promise of being a leader in Canadian Dentistry. On the retirement of Dean J. S. Bagnall this year, Dr. McLean was unanimously recommended by the Faculty for the position of Dean, to which posi-



Photo—Bollinger

DR. JAMES D. McLEAN

Dean, Faculty of Dentistry
Dalhousie University

tion he was appointed in September of this year.

Dr. McLean received his early education in the public schools of Regina and Regina College. He entered the University of Toronto in 1939, graduating in 1942 with the degree of D. D. S. His devotion to his country and fellowmen was manifest by his voluntary enlistment in the Canadian Dental Corps almost immediately on graduation. He proceeded overseas in 1943 where he saw service in England and North West Europe and here again his devotion to his fellowmen was so evident that at the cessation of hostilities, he was retained until 1946 when he was honorably discharged. Immediately after this, his hunger for knowledge took him to the University of Minnesota where he had one academic year in Post Graduate work.

In 1947 he entered practice in Edmonton and in the same year received his appointment to the Faculty of that institution. His ability as a teacher was soon recognized by his appointment as Professor of Crown and Bridge. He served in the Edmonton District Dental Society as secretary and a member of the Executive, also as Chairman of the Ethics Committee of the Canadian Dental Association and as a member of the Research Committee. He has been active in boys' groups and Church groups and is a member of the Board of Fort Massey United Church.

In 1950, he married the former Miss Audrey Mitchell of Edmonton, a very charming and talented young lady, whose forebears' feet traversed the shores of Pictou County in Nova Scotia. They are the proud parents of two sons, Douglas and Donald.

Just recently his ability was further recognized when he was the only member proposed for membership before the Canadian Section of the International College of Dentists for the honorary degree of F. I. C. D.

We feel at Dalhousie University, although we have a man young in years, we have one mature in mind and capable of leading our institution to ever greater heights in Canadian Dentistry. Out of the West not only comes wealth but talent and leadership much of the same calibre as we export from the Maritimes!

J. P. Mc.

Alberta

Report of the Ninth Pacific Coast Dental Conference, Banff, Alberta June 1—June 5, 1954

The Ninth Triennial Pacific Coast Dental Conference was the largest Dental Convention to be held west of Toronto in Canada. 572 Dentists registered. Guests raised this figure of Dentists attending to over the 600 mark. Over 800 people enjoyed the pleasures of the Banff Springs Hotel when they registered there. The remainder of persons attending were delighted with the adequate accommodation afforded outside the Hotel.

Dr. R. A. Rooney, President of the Ninth Pacific Coast Dental Conference was thrilled with the success of the meeting and was proud of Dr. C. S. Lee and his able Committee men for the outstanding Convention that they organized.

The scientific programme had three essayists, three lecturers and approximately sixty table clinicians to make the conference a most successful scientific meeting.

Dr. W. G. McIntosh of Toronto presented exceptionally well-received essays on Periodontics. Dr. Hamilton B. G. Robinson of Ohio and Dr. L. W. Peterson of St. Louis presented three excellent essays on Surgery. Dr. H. R. MacLean, Edmonton, presented a lecture on the Bulyea gold crown.

Quite often the Ladies' Programme is an afterthought, but the Calgary ladies organized one of the outstanding Ladies' Programmes. The ladies were overjoyed with the activities planned for them and felt that they would have to stay on in Banff for a few extra days to be able to enjoy the many beauties of Banff National Park.

One of the outstanding features of the Convention was a humorous address with

an "International Understanding" theme delivered by the Honourable C. E. Gehart, Provincial Secretary and Minister of Municipal Affairs for the Province of Alberta. Mr. Gehart spoke at a Dinner Luncheon sponsored by the Province of Alberta.

At the close of the Convention Dr. R. A. Rooney, President and Dr. C. S. Lee, Chairman at large, were presented with appropriate tokens of appreciation for the excellent Convention they had made possible.

Dr. Phil Tennis, President Elect of the 10th Pacific Coast Conference extended an invitation to all to register for the next Conference to be held in San Diego, California in 1957 but warned that one couldn't expect the perfection of hospitality, programme and excellence of nature that was had at Banff.

About 150 dentists registered for a two-day refresher course held at the **University of Alberta** in September. The bi-annual course, sponsored by the faculty of dentistry at the University and the Alberta Dental Association, is open to dentists from the four western provinces and to alumni of the university. Delegates were welcomed by Dr. W. Scott Hamilton, dean of the faculty of dentistry, and Dr. W. H. Johns, dean of the faculty of arts and science and acting president of the University.

Professor R. W. Phillips, chairman of the department of dental materials, University of Indiana, addressed the group on the subject of the latest developments in filling materials. Other speakers included Dr. Arthur Ahrens, Lethbridge, whose subject was "Dental Health Insurance Plans", Dr. John Clay speaking on "Practical Tips in Oral Surgery", and Dr. Paul Rentiers.

New Brunswick

Woodstock, N.B. will be the first community in the Maritime provinces to fluoridate its water supply. After a delegation, headed by Dr. J. B. Sutherland, urged such action, the town council decided to try fluoridation when the new water system is installed shortly.

Saskatchewan

Dr. A. E. Chegwin, director of dental health, **Saskatchewan Department of Public Health**, announced recently that bursaries had been awarded to three Saskatchewan girls to take a two year course for dental hygienists. On completion of training these girls will be employed in Saskatchewan health regions where they will carry on a preventive dental programme for children.

British Columbia

During the **British Empire Games** held at Vancouver in midsummer the **Vancouver and District Dental Society** maintained on the U.B.C. campus a two-chair modernly equipped dental clinic complete with X-ray and dark room equipment. Co-ordination of dental and medical facilities was established through the hospital sick parade.

The equipment and supplies were provided free by the two larger dental supply companies. Hand instruments and consumable supplies were furnished by the Royal Canadian Dental Corps. The Vancouver society provided a full-time dental nurse, some supplies, laundry and insurance at a cost of over \$250.

Volunteering their services were 65 dentists, who rendered treatment on an emergency basis. There were 40 patients and 51 dental operations, some of a very minor nature.

The committee, composed of Drs. W. A. Jefferies and F. K. Berry, have made this recommendation for dental services at future British Empire Games: It would be less expensive and cumbersome either to engage one dentist, who is a member of the local dental society, to carry out all emergency treatment in his own office at his own regular fees; or to have volunteers carry out treatment in their own offices.

The first clinic and meeting of the new term was held in Chilliwack by the **Fraser Valley Dental Society** with the largest attendance the group has ever had. Dr. Frank McCombie, Director of the Division of Preventive Dentistry, gave the address of the evening.

Officers of the society are:

President: Dr. E. E. Kelln

Secretary: Dr. D. D. Vogt

Directors: Dr. D. J. Yeo

Dr. L. B. Alexander

Dr. J. N. Penzer

Dr. J. E. Lukas

The current season began for the **Vancouver and District Dental Society** when the new president, Dr. D. H. Warren, wielded the gavel and welcomed two enthusiastic gatherings.

The speaker in the afternoon and in the evening after dinner was Dr. John W. Geller of Indianapolis, an outstanding prosthodontist. His afternoon subject was "The Fundamental Principles of Occlusion," and in the evening his address was entitled "General Considerations of Immediate and Full Denture Work."

As relaxation between lectures the visual education committee presented an interesting film entitled "The B.C. Lions and Football."

One of the features of the organization is study club activity, and preparations are under way for a busy season in this direction.

The Society has arranged for a "Telephone Extension Program" consisting of one lecture to be given each month commencing in December.

—D. H. M.

Ontario

Friday 17th, September, 1954, saw the beginning of the 14th annual **Northern Ontario Dental Association** Convention, held in North Bay, Ont. From Parry Sound, Sault Ste. Marie, to Terrace Bay and Fort William, members arrived early as old friends and new mingled at the reception in the Empire Hotel.

Saturday morning Dr. Wilf Clark, Hamilton, Ont., gave a clinic on "Full Dentures". As usual this clinic emphasized the practical side of problems met in full denture prosthesis, and Dr. Clark answered questions for a full hour.

The noon luncheon, presided over by Dr. R. A. Torrance, at which sixty-four were present, featured a thought-provoking address by Dr. A. E. Sutherland, D.P.H. Officer, Sudbury, Ont., on the subject of D.P.H. He outlined its history, its present functions, its problems, past, present, and future.

In the afternoon, Dr. A. A. Antoni addressed the group on "Oral Surgery". This talk was made more interesting by the slides he showed. Once again a lengthy period was spent by the Clinician in answering questions from his audience.

At the business meeting, the following were elected for 1955: President, Dr. A. Kaukinen, Sudbury; Vice-President, Dr. G. White, Sault Ste. Marie; Secretary-Treasurer, Dr. A. E. Sutherland, Sudbury. At this meeting a group of representatives from Sault Ste. Marie undertook the responsibility of looking after the N.O.D.A. Convention in 1956, and this will be the first time that Sault Ste. Marie will be our host.

The banquet and dance Saturday evening was attended by one of the largest number in the N.O.D.A. Convention history. Guests at the head table included amongst them, Dean Ellis, Dr. J. H. Johnson, Dr. Gord Johnson, Dr. G. T. Ross, all of the Faculty of Dentistry; Dr. H. Bateman, President-elect of the O.D.A., Dr. E. A. White, Chairman D.P.H. committee, O.D.A., Dr. M. A. Clay, D.V.A., Dr. V. A. Keenan, of the Board of Governors, R.C.D.S.

Without a doubt this year the reputation of the N.O.D.A. Convention from a professional as well as a social standpoint was increased by the way this Convention was smoothly carried out. The Executive of President R. A. Torrance, Vice-president A. Kaukinen and Secretary-treasurer L. Boland along with the North Bay Dental Society can be proud of the success they made of this year's Convention. M. B.

The annual meeting of the **Eastern Ontario Dental Association** was held at the lovely, historic city of Kingston in the LaSalle Hotel on September 19, 20 and 21, with a record attendance. Many of the members were accompanied by their wives, who were royally entertained by the Ladies' Committee of the Kingston Dental Society. The programme for the convention was exceptionally well planned and the credit must go to the committees in charge.

A variety of entertainment was arranged for the delegates and their wives on their arrival on Sunday including fishing, golfing, and sight seeing. In the evening the presentation of "The Moon is Blue" in the Burgundy Room of the Hotel-LaSalle by Arthur Sutherland's International Players followed by a reception was the introduction to a very successful meeting.

Dr. E. E. Johns, President, proved a very gracious and capable chairman throughout the meeting. He officially opened the convention at the Monday luncheon at which the ladies were guests. His Worship, Mayor Wright of Kingston extended the greetings of the city. The principal speaker was Brigadier C. D. Quilliam, who had spent 29 years in the British Army and was Chief Middle East correspondent of the London Times. His masterly presentation of Middle East Policy was most interesting and informative.

The scientific programme was of high calibre. Dr. Jacob Stolzenberg, Brooklyn, N.Y. gave interesting presentations on Psychosomatic Dentistry, Dental Hypnosis, and Dynamics of the Psychomechanistic Background in Dental Hypnosis in which he gave a practical demonstration of hypnosis.

Avoiding Complications in Minor Surgery and Biopsy in Oral Diagnosis were subjects presented by Dr. James R. Hayward, M.S., University of Michigan, Ann Arbor, Mich. These were outstanding presentations.

The Lesions of Oral Structure by Major A. T. Roger, Diagnosis and Treatment Planning for Fixed Bridges by Major G. C. Evans, were two excellent presentations. The clinicians from the R.C.D.C. School, Ottawa, are to be commended for their interesting contributions to the programme.

Dr. R. C. Honey and Dr. H. M. Yule, Peterborough, gave informative talks on the Operative Treatment of the So Called Unmanageable Child.

Limited Clinics included Operative Dentistry under General Anaesthesia by N. B. Sproul, D.D.S., A. B. Noble, M.B., and V. A. Nekus, M.D., Kingston, and Acrylic Restorations in Anterior Teeth by Dr. C. McKee of Peterborough. Twenty-seven table clinics on Monday morning rounded out a well-balanced programme.

During the convention the Eastern Ontario Dental Nurses and Assistants Association held a very successful meeting under the convenorship of Miss Velma Wallace.

Bringing the business part of the programme to a conclusion was a Dental Public Health Panel Discussion with Dr. Wesley J. Dunn, Editor of the Journal of the Canadian Dental Association, as Moderator. On the panel were Dr. Hugh McLaren, D.D.-P.H., Ottawa, Dr. Geo. Clarke, D.D.P.H., Ottawa, John Wyllie, M.A., M.D., B.Sc., D.P.H., Queen's University, Kingston, Dr. G. Nikiforuk, M.S., Faculty of Dentistry, U. of T., and Dr. David Mitchell, M.Sc. of Peterborough. Discussion on the subjects of Organized Dental Health Programmes, Auxiliary Personnel, Fluoridation of Water Supplies and Topical Application of Fluorides together with Preventive Orthodontics proved very interesting. The audience entered whole-heartedly into the discussions, which, if time had permitted, might have gone on much longer. Dr. Dunn expressed satisfaction in the manner in which not only the members of the panel had discharged their duties but also in the manner in which the audience had participated in the discussion of the challenging problems with which we are faced in the field of Dental Public Health. He concluded his remarks by saying, "The dental profession must realize that it is dealing with a major Public Health problem — one that will require all the resources at its disposal in attempting to arrive at a satisfactory solution. Dentistry can no longer be satisfied with a service which allows for loss of teeth and function requiring extensive and expensive restorative measures".

"The trust that is held by dentistry is the Dental Health of the people it serves. The profession must provide dental care which is preventive and positive in nature".

The President's dinner on Monday evening at the Catarqui Golf and Country Club with Dr. Gordon Collins as M.C. and Dr. A. E. Fyffe in charge of the floor show was an outstanding evening of entertainment.

The usual Stag Dinner on Tuesday night chuckfull of fellowship and fun brought

the programme to an end. At this meeting the golf prizes were given out.

At the business meeting Dr. F. F. Kemp, Richmond, was elected President, Dr. E. E. Johns, Past President, Dr. M. M. Derrick, Vice President, and Dr. A. C. Stinson, Secretary-Treasurer. Auditors: Dr. L. E. MacLachlan and Dr. I. W. Hamilton, Ottawa. Advisory Board: Brig. E. M. Wansbrough, Drs. W. C. G. Collins, J. A. Callingham, J. D. Lyon, J. H. C. Gowland, E. M. Murphy, F. G. Phillips, H. G. Hudson, W. D. Bryce, C. E. Woods, and C. M. Burnett. Historian, Dr. H. A. Stewart.

Thus another highly successful programme marks another milestone in the history of the E.O.D.A. Congratulations to all. It was a good show! M. P.

The members of the Dental Profession in the Toronto area will be able to participate in the University of Illinois **Telephone Extension Course** this winter. The course of five lectures, spaced monthly, and sponsored by the Toronto Alumni chapter of Alpha Omega, is being run on a cost basis. The programme this year is more practical than any of the previous courses.

Illustrated manuals will be distributed as before, and, film-strip projections will be a new addition this year. The post-lecture discussions will also be continued.

The lectures will be held at The Royal York Hotel at 8.30 p.m. and accommodation will have to be limited to the first 50-60 to register. The cost of the series will be \$15.00 and Application can be made to Dr. J. E. Ackerman, the chairman.

General News

The Supreme Court of the United States has refused to review a California Supreme Court decision upholding the legality of the addition of fluorine ions to San Diego water supplies. In effect, the U.S. Supreme Court decision sustained the pro-fluoridation ruling of the California courts. It was the first time that the nation's highest court had announced a ruling involving the fluoridation of community water supplies. Meanwhile, the number of cities and towns where fluoridation is now in operation increased to 981 according to the A.D.A. Council on Dental Health. The communities have a population of more than 17½ million persons. Reports of 21 new fluoridation projects have been received in the past month, including Denver with a population of 527,000 and Oklahoma City with a population of 244,000. The Denver project is seasonal. The South Platte river, the city's principal source of drinking water, has a natural fluoride content of one ppm. The auxiliary supply from the Moffatt Tunnel, used from mid-May to mid-December, was fluoride-deficient until fluoridation was started.

A.D.A. News Letter.

A recent statistical study by three public health scientists showed that death rates for the five leading causes of death were nearly identical in communities with fluoride in their water supplies and in fluoride-deficient communities. For four of the five

causes, they were found to be slightly less in the fluoride communities.

In the study, 32 communities with fluoride-bearing water were paired with 32 fluoride-deficient communities for comparison of the number of deaths from heart disease, cancer, intra-cranial lesions, nephritis and cirrhosis of the liver. The results reported were:

<i>Cause of Death</i>	<i>Fluoride city</i> (per 100,000)	<i>Nonfluoride city</i> (per 100,000)
Heart disease	354.8	357.4
Cancer	135.4	139.1
Intra-cranial lesions . .	111.5	104.8
Nephritis	21.9	26.7
Cirrhosis of the liver..	6.6	8.2

Deaths from all causes were reported as 1010.6 per 100,000 population for fluoride communities; 1005.0 per 100,000 for non-fluoride communities.

The population of the fluoride communities totaled 896,625; the nonfluoride communities, 1,297,500—totals big enough to be "statistically significant," according to the scientists who made the study. They were Dr. Thomas L. Hagen, chief of the Division of Dental Public Health of the U.S. Public Health Service, and Morten Pasternack and Grace C. Scholz, statisticians. The 64 cities each had populations of 10,000 or more and were located in 16 states. A report of the study was published in the May issue of Public Health Reports.

Dental Health Highlights.

In Memoriam

George Johnston Musgrove.—Dr. George J. Musgrove of Niagara Falls, Ontario, passed away on September 22nd. He was in his 91st year.

Born in Bluevale, Huron County, Dr. Musgrove received his early education in Wingham and Clinton. After graduating from the Royal College of Dental Surgeons in 1892, he practised in Parkhill for two years, and then in Niagara Falls until 1945.

Dr. Musgrove was an Honorary Member of the R.C.D.S., and was an active member of the Niagara Falls Dental Society. He served on the Public School Board of Niagara Falls from 1896 until 1907 when he was elected to the Collegiate Institute Board. In 1914 he was elected to the Ontario Legislature and represented Niagara Falls riding for five years.

Dr. Musgrove was a member of the United Church of Canada.

He is survived by three grandchildren; Carolyn and Jack Musgrove of Toronto, and Nancy Chapman, Fort Erie.

Charles Finlay Walt.—Dr. Charles Finlay Walt of Toronto and Stirling died on September 28th, at the age of 81.

Dr. Walt was born in Northumberland County, Ont., and received his early education in Owen Sound. Following graduation from the Royal College of Dental Surgeons in 1903, he practised in Stirling until 1947.

During the first World War Dr. Walt served overseas with the Canadian Army Dental Corps, and in 1917 he was mentioned in despatches.

A member of the Masonic order, he was a past master of the Stirling Lodge, A.F. and A.M. Dr. Walt was also the first president of the Stirling Community Welfare Club, a member of the Stirling Board of Education, and some years ago he served on the Board of Examiners of the R.C.D.S. He was an active member of St. Paul's United Church, where he was an elder for many years.

He is survived by a daughter, Mrs. C. C. Gasgoigne, Ottawa; a son, James Cecil Walt, Toronto; and a brother, Addison Walt, Orangeville.

Joseph Howard Lumsden.—Dr. Joseph H. Lumsden of Ottawa passed away on August 13th, at the age of 72.

Born and educated in Smiths Falls, Ontario, Dr. Lumsden graduated from the

Royal College of Dental Surgeons of Ontario in 1913. He practised in Carleton Place, Ont. for two years before moving to Ottawa, where he practised for 40 years. He retired in June 1954 due to ill health.

Dr. Lumsden was a member of the Ottawa Dental Society, and he attended Parkdale United Church.

He is survived by two nephews, H. G. McClelland and George E. McClelland, of Ottawa; two nieces, Mrs. C. W. Cotter, Toronto, and Mrs. D. Thompson, Ottawa; and one sister-in-law, Mrs. G. Lumsden, Ottawa.

Norman Dingwall Winn.—Dr. Norman Dingwall Winn of Toronto died at his home on October 1st. He was 59 years of age.

Dr. Winn was born and received his early education in Milton, Ont. After graduating from the Royal College of Dental Surgeons of Ontario in 1920, he practised in Milton for a short while, and then in Toronto for 28 years.

During the first world war Dr. Winn served with the Canadian Army Dental Corps.

He was a member of St. John's Evangelical Lutheran Church.

Surviving Dr. Winn are his wife, Hilda L. Grindall; and four brothers, William of Brandon; Campbell, Campbellville; George, Galt; and Robert, Pembroke.

James Fuller Shute.—Dr. James Fuller Shute of Quesnel, B.C., passed away on the 13th September. He had celebrated his 80th birthday in August.

Born in Fredericton, N.B., Dr. Shute graduated from the University of Pennsylvania. He practised in Alberta for a short while before moving to Victoria, where he remained for eight years.

During World War I he held the rank of Captain in the Canadian Army Dental Corps. Following the war Dr. Shute practised in several towns in British Columbia, spending considerable time travelling the B.C. coast and periodically stopping at small logging and fishing settlements. He finally moved to Quesnel where he practised for 12 years.

Dr. Shute is survived by his wife, Martha Margaret; three daughters, Margaret Elizabeth of Vancouver; Mrs. Doreen Gravlin of New Westminster; and Mrs. Kathleen Bissett of Brantford, Ont.; and seven grandchildren.

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1 9 5 5	Toronto, Ontario	May 15th — 18th
1 9 5 6	Banff, Alberta	June 3rd — 6th
1 9 5 7	Winnipeg, Manitoba	June

Future Events

Date	Function	Location	Officer	Address
Nov. 25	Academy of Dentistry Winter Clinic	Toronto	Dr. J. Bevan King	1414 Danforth Ave., Toronto, Ont.
Dec. 5	Mid Annual Meeting of American Academy of Dental Medicine	New York City	Dr. Wm. Greenhut	124 E. 84th St., New York 28, N.Y.
Dec. 7	Vancouver and District Dental Society Meeting	Vancouver	Dr. D. H. Warren	3256 Cambie St., Vancouver 9, B.C.
Jan. 3, 1955	Vancouver and District Dental Society Meeting	Vancouver	Dr. D. H. Warren	3256 Cambie St., Vancouver, B.C.
Jan. 20	Academy of Dentistry	Toronto	Dr. J. Bevan King	1414 Danforth Ave., Toronto
Jan. 21	Public Health Workshop on Dental Programmes in Industry	New York City	Dr. Alfred Asgis	1st District Dental Society, Hotel Statler, New York, N.Y.

Short Graduate Courses

Date	Course	Location	Address
Nov. 29- Dec. 3	Dental Radiology	University of Toronto	The Dean, Faculty of Dentistry, University of Toronto, 230 College St., Toronto 2-B.
Jan. 17-21, 1955	Periodontics	as above	as above
Jan. 23- Feb. 6	Orthodontics	Temple University	Dr. Louis Herman, Director of Postgraduate Studies, Temple University, Dental School, 3223 North Broad St., Philadelphia, Pa.
Jan. 26-27-28	Clinical Occlusion	as above	as above

Notice

ATTENTION: Graduates of Faculty of Dentistry, University of Toronto, 1918 and 1919. Two copies of Hya Yaka are not available in the Faculty Library. These issues have great historical importance and are earnestly sought by the Librarian.

Volume 18, Number 3, March 1919

Volume 17, Number 5, December 1918

Journal

DE L'ASSOCIATION DENTAIRE CANADIENNE

Coup d'oeil bactériologique dans le canal radiculaire

par V. FREDETTE, B.Ph.L., D.Sc., F.C.I.C.

(Professeur agrégé à la chaire de Bactériologie de la Faculté de Médecine, Sous-Directeur de l'Institut de Microbiologie et d'Hygiène de l'Université de Montréal)

Les germes rencontrés dans les infections buccales et dentaires, ou dans les infections générales ayant pour origine des lésions de la cavité buccale, font habituellement partie de la flore bactérienne de la bouche normale. Il est donc nécessaire d'examiner en détail cette flore bactérienne normale de la cavité buccale de l'homme.

De grandes difficultés se présentent d'ores et déjà car la bibliographie sur le sujet est suffisamment confuse pour décourager toute analyse. Beaucoup de divergences peuvent toutefois être ramenées à une question de technique bactériologique défectueuse, surtout en ce qui concerne les bactéries anaérobies. Nous étudierons alors les principes qui régissent la culture des anaérobies, puis les méthodes propres à assurer un examen

parfait du canal radiculaire, suivis d'une brève étude sur l'étiologie bactérienne des infections radiculaires.

Nous tenterons ensuite de répondre à la question suivante: "Pourquoi certaines bactéries pénètrent-elles dans la pulpe dentaire?" Pour ce faire, nous devrons examiner sommairement le domaine très important de la pathogénicité.

Enfin, quelques indications seront fournies relativement à la destruction des bactéries dans le canal radiculaire.

Flore bactérienne normale de la cavité buccale de l'homme.

L'homme naît stérile mais, à peine quelques heures après son entrée dans le monde, des bactéries se déposent sur ses téguments pour s'infiltrer dans toutes les cavités naturelles de son organisme où elles se fixent jusqu'à sa mort. Ces bactéries constituent ce que l'on appelle la flore normale du corps humain.

De très grands nombres de bactéries se trouvent dans la bouche humaine, probablement parce que la nourriture et l'humidité y sont en abondance. Des cul-

Conférence prononcée à la
Société d'Endodontie de Montréal,
le 20 septembre 1954.

tures faites à partir d'échantillons de salive humaine ont montré de 43,000,000 à 5,500,000,000 de bactéries par centimètre cube. Malgré ces myriades d'êtres vivants, il est surprenant que les multiples accidents au niveau de la muqueuse buccale ne soient plus souvent suivis d'infections graves. On peut en déduire que la muqueuse possède des propriétés remarquables pour résister et même attaquer les bactéries, sans compter le fait que la salive contienne la lysozyme et autres agents hostiles. De toutes façons, les essais de stérilisation de la cavité buccale ont généralement fait plus de mal à la muqueuse qu'aux bactéries qui s'y trouvent, car les défenses locales ont été diminuées et l'infection plus régulièrement constatée.

Malgré les renseignements fort instruc-

tifs fournis par ces études, il est plus intéressant de connaître les diverses espèces qui constituent cette flore abondante. Le tableau suivant nous en donne une idée: il est tiré de "Bergey's Manual of Determinative Bacteriology" ainsi que du "Manuel de Classification et de Détermination des Bactéries Anaérobies" de Prévot (7). On n'y trouve que les espèces dont l'habitat normal est la bouche, à l'exclusion du rhino-pharynx.

Afin d'en faciliter l'inventaire, la liste a été divisée en Cocci ou bactéries de forme ronde, Bacilles ou bactéries de forme cylindrique, enfin Spirilles et Spirochètes qui constituent, on le sait, les bactéries enroulées en spirales dont quelques-unes semblent se rapprocher davantage du règne animal alors que toutes les autres sont des plantes microscopiques.

Flore bactérienne de la bouche normale

			Aérobie	Anaérobie
Cocci	Gram +	{ Staphylococcus	+++++	++
		{ Streptococcus	+++	++++++
		{ Diplococcus		+
		{ Gaffkya	+	
	Gram -	{ Neisseria	+	+
		{ Veillonella		++
Bacilles	Gram +	{ Bacillus	+	
		{ Lactobacillus		++
		{ Ramibacterium		+++++
		{ Catenabacterium		++
		{ Plectridium		++
	Gram -	{ Corynebacterium	+	
		{ Fusobacterium		+++
		{ Ristella		++
		{ Hemophilus	+	
		{ Escherichia	+	
		{ Aerobacter	+	
Spirilles	Gram -	Vibrio	+	+++++++
Spirochètes		{ Borrelia		++
		{ Treponema		+++++++
Actinomycètes	Gram +	{ Bifidibacterium		++
		{ Actinomyces		+
	Gram -	{ Spherophorus		+++
		{ Fusiformis		+++
		{ Fusocillus		++
		{ Leptotrichia		++
Levures	Gram +			
Moisissures	Gram +			

En ce qui concerne les Actinomycètes, certains bactériologistes les rangent avec les Bactéries, d'autres en font des moisissures; peu nous importe ici car toutes appartiennent au règne végétal. On connaît très peu de choses actuellement quant aux différentes espèces de Levures et de Moisissures que l'on peut rencontrer dans la bouche normale.

Parmi ces grands groupes de germes, on peut distinguer ceux qui prennent la coloration de Gram et ceux qui ne la prennent pas ou comme l'on dit communément, ceux qui sont à Gram-positif et ceux qui sont à Gram-négatif; mais il importe plus de savoir quelles sont les espèces aérobies et quelles sont les espèces anaérobies, car on peut s'attendre à trouver ces dernières dans une cavité close comme un canal radiculaire et surtout parce que les anaérobies sont souvent laissées de côté à cause de difficultés techniques dans leur culture.

Un seul coup d'oeil suffit pour se rendre compte que les anaérobies prédominent: en effet, même chez les cocci à Gram-positif, les Streptocoques aérobies, dont l'espèce "viridans" est si souvent mentionnée au sujet des infections de la pulpe et, de l'apex, sont en nombre inférieur aux espèces anaérobies, dont au moins 6 ont été décrites depuis les travaux originaux de Veillon en France, parus dès 1893 (11); pourtant ces Streptocoques anaérobies sont pratiquement oubliés dans les textes anglais de nos jours.

De même, les très petits cocci à Gram-négatif, désignés sous le nom de Veillonella en souvenir de ce pionnier des anaérobiologues, sont très souvent négligés bien qu'ils soient fréquemment rencontrés dans la bouche.

Dans le grand groupe des bâtonnets à Gram-positif, qui sont presque tous anaérobies ou microaérophiles, on remarque les Lactobacilles qui ont eu leur heure de gloire en rapport avec la carie dentaire, tandis que les Ramibacterium, ainsi nommés à cause de leurs extrémités en rameau, sont connus depuis 1898 comme les agents prédominants dans la pyorrhée alvéolaire. Les autres genres ont moins

d'importance dans les infections radiculaires.

Il y a beaucoup de discussion autour des bâtonnets à Gram-négatif fusiformes, pour lesquels Bergey ne reconnaît qu'un seul genre: *Fusobacterium* qui compte seulement 3 espèces, toutes anaérobies d'ailleurs, alors que Prévot y distingue *Spherophorus*, *Fusiformis* et *Fusocillus* qui comptent au total 9 espèces, également anaérobies. Ces micro-organismes sont probablement les mieux connus de tous les anaérobies, car non seulement les trouve-t-on dans la bouche à l'état normal, mais ils deviennent singulièrement prédominants dans l'angine de Vincent et autres lésions nécrotiques bien étudiées de la muqueuse buccale. Parmi ces mêmes bâtonnets à Gram-négatif, il ne faut pas oublier les *Ristella* qui ont également été décrites avant le début du siècle et que l'on trouve aussi dans la pyorrhée alvéolaire en compagnie de très nombreuses espèces de *Vibrio*. Presque toutes, les anaérobies sont généralement mises de côté, bien que toujours présentes.

Comme l'on sait, les Spirochètes ne se colorent pas par la méthode de Gram, mais il est possible néanmoins de les diviser en *Borrelia* et *Treponema* dont plusieurs espèces, toutes anaérobies, se rencontrent dans la bouche à l'état normal et à l'état pathologique. La plupart ont été décrites entre 1912 et 1920 par Noguchi et Hoffman travaillant indépendamment.

Les Actinomycètes à Gram-positif sont plus anciennes, puisque Tissier décrivait *Bifidobacterium bifidum* déjà en 1899; c'est à cause de leur pléomorphisme que ces espèces anaérobies sont souvent rangées avec les Moisissures.

Finalement, les Leptotriches sont de grandes bactéries à Gram-négatif dont le rôle dans la bouche est inconnu.

Principes de la culture des bactéries anaérobies.

Puisque les anaérobies sont si nombreux et fréquents, il est bon de signaler ici que des différences dans la technique de leur culture au laboratoire ont donné

lieu à de sérieuses difficultés. Il suffit de souligner, par exemple, que Bergey ne mentionne que 160 espèces au total alors que Prévot en décrit plus de 370.

D'une manière générale, les bactériologistes anglo-américains utilisent, depuis 1917, la jarre à vide du type McIntosh-Fildes ou Brewer pour isoler et identifier ces bactéries curieuses pour lesquelles l'oxygène libre est toxique. Le principe de la jarre consiste à faire un vide aussi poussé que possible par aspiration, d'ajouter ensuite un excès d'hydrogène qui se combine sous l'influence d'un catalyseur, aux traces d'oxygène restant. La technique française, également pratiquée par les Allemands, consiste simplement à diluer le specimen à étudier dans une série de longs tubes étroits qui renferment un milieu semi-solide spécial. Les colonies de bactéries anaérobies se développent uniquement dans la profondeur de la masse de gélose d'où il n'est peut-être pas aussi facile de les retirer qu'à la surface d'une boîte de gélose; c'est là le grand argument des adversaires de cette technique qui n'en a pas moins ses mérites puisque la majorité des bactéries trouvées dans la bouche l'ont été au début du siècle, ainsi que nous l'avons vu, alors que cette technique était déjà à l'honneur. Les protagonistes de la jarre à vide voudraient-ils laisser entendre que rien de sérieux n'a été fait avant son invention en 1917?

La principale difficulté dans l'examen de la flore normale de la bouche et plus encore de la flore du canal radiculaire, réside donc dans le choix d'une technique pour cultiver les anaérobies. Quels sont donc les principes qui doivent nous guider dans ce choix?

Avec Iwao Takahashi, j'ai pu vérifier (4), à la suite de nombreux auteurs que la jarre à vide fournit des conditions suffisantes pour décolorer le bleu de méthylène, une épreuve que beaucoup de bactériologistes déclarent satisfaisante; elle correspond à un potentiel d'oxido-réduction ou $rH=14$. Mais dans ces conditions, seules les espèces les moins exigeantes pourront se développer, quel-

quefois même seulement après 2 ou 3 jours si l'inoculum est pauvre (TW). Les espèces véritablement strictes sont incapables d'y croître, car elles exigent des potentiels beaucoup plus bas, à partir de $rH=12$, où le vert Janus devient rose. Des mesures faites dans mon laboratoire avec le bleu de méthylène ($rH=14$, $Eh=-0.005$), le vert Janus ($rH=12$, $Eh=-0.035$), le bleu Nil ($rH=9.2$, $Eh=-0.080$), le violet crésyle ($rH=8$, $Eh=-0.120$) et l'indigocarmin ($rH=7.4$, $Eh=-0.150$), ont montré qu'une atmosphère d'hydrogène en excès ne suffit pas pour abaisser le potentiel au niveau nécessaire à la croissance de ces espèces exigeantes dans les milieux usuels qu'utilise la jarre.

Avec la technique française, on peut facilement vérifier à la suite de Prévot (7) et d'autres que la colonne de gélose fournit toute une gamme de potentiel d'oxido-réduction: depuis 20 à la surface jusqu'à 7.4 au fond où les plus stricts croissent abondamment. Des systèmes enzymatiques particuliers sont donc capables de réduire par simple chauffage le milieu spécial employé. On peut alors se rendre compte que n'importe quelle espèce anaérobie trouvera là-dedans le rH qui lui convient le mieux, tout comme les bactéries en général exigent des conditions optima de température et de pH pour se développer rapidement et au maximum.

Il est remarquable que la plupart des anaérobies se développent bien en moins de 24 heures dans les milieux utilisés pour la technique française; en outre, plusieurs espèces montrent à ce moment des colonies suffisamment caractéristiques pour orienter déjà l'identification, alors que dans la jarre à vide plusieurs espèces différentes montrent des colonies identiques.

L'intérêt de l'isolement de chacune des espèces en caude dans l'infection pulpaire réside non seulement dans un diagnostic bactériologique exact, mais aussi dans la possibilité d'orienter le traitement avec des agents exactement appropriés. La question des épreuves de sensibilité des germes aux divers agents thérapeutiques

sera examinée quand le traitement des infections du canal radiculaire sera considéré.

Examen bactériologique du canal radiculaire:

Pour pratiquer une analyse bactériologique du canal radiculaire des dents, comme n'importe quelle analyse bactériologique d'ailleurs, il faut utiliser pour plusieurs raisons un milieu de culture liquide de préférence à un milieu solide.

D'abord les milieux liquides permettent plus facilement la croissance de petits nombres de bactéries: on les qualifie volontiers de milieux d'enrichissement. Il faut avoir soin cependant de choisir un volume de milieu proportionnel aux nombres microbiens du specimen; autrement, on risquerait d'obtenir de faux résultats négatifs alors même que le milieu convient aux espèces recherchées.

Ensuite, l'emploi de milieux liquides permet la dilution et partant, l'inactivation, de tout agent thérapeutique (désinfectants, sulfamidés, antibiotes) susceptible d'exercer une action bactériostatique sur milieux solides.

Finalement, le milieu sélectionné permet plus facilement la croissance des bactéries anaérobies, surtout quand on utilise un tube étroit pour réduire l'oxygénation. Notre expérience montre que le milieu au thioglycolate et le bouillon Vf conviennent très bien.

Une autre considération importante dans toute analyse bactériologique est la question de l'inoculum ou quantité de specimen. Je réalise pleinement la difficulté de prélever des échantillons dans un espace aussi restreint qu'un canal radiculaire, mais alors pourquoi se donner la peine de faire un prélèvement si on invite en même temps de faux résultats. Il est encore ici question du rapport entre le nombre de cellules bactériennes et le volume total de milieu dans lequel elles baignent. On a déterminé pour des bactéries aérobies, comme le colibacille, par ex., que la croissance ne démarre pas à moins d'apporter 30 cellules par centimètre cube de milieu; pour

des aérobies plus exigeants, les Streptocoques, par ex., les nombres sont encore plus élevés. Bien que des études semblables ne semblent pas avoir été publiées, en ce qui concerne les anaérobies, on peut s'attendre à ce que des nombres encore plus grands soient nécessaires.

Quiconque est familier avec la taille relative des microbes peut facilement s'imaginer que plusieurs centaines de bactéries puissent prendre place côte à côte sur la pointe de papier utilisée pour échantillonner les canaux radiculaires, mais la question primordiale est la suivante: "Les bactéries en cause dans une infection de la pulpe dentaire sont-elles également réparties dans toute la masse du tissu malade?" Si tel n'est pas le cas, comme on peut s'y attendre, il est prudent de procéder à plusieurs prélèvements simultanés de façon à obtenir un échantillon représentatif.

Une fois la croissance obtenue, il faut ensuite séparer les espèces en cause de façon à les identifier et à déterminer leur sensibilité vis-à-vis les agents médicamenteux. Pour ce faire, il faut de toute nécessité avoir recours aux milieux solides et c'est là que sont nées les grandes différences d'opinion au sujet des anaérobies. Les principes exposés plus haut permettent de juger à leur juste valeur un grand nombre de publications sur ce sujet.

L'emploi de frottis pour fins de contrôle bactériologique des canaux dentaires a été laissé jusqu'ici intentionnellement. Tout le monde admet de nos jours que cette technique est infiniment moins sensible que la culture, mais elle peut cependant fournir des renseignements précieux, quand on y voit quelque chose. Qu'il suffise de dire que la présence de cellules de pus indique une maladie; de plus, la présence de bactéries peut orienter le diagnostic en permettant une approximation du nombre total de bactéries et des espèces en cause, d'où des indications précieuses pour le choix de milieux sélectifs susceptibles de hâter l'analyse. Mais on ne doit jamais oublier que

l'absence de microbes sur un frottis ne signifie pas stérilité; tout au plus, peut-on tirer la conclusion qu'il existe dans le specimen examiné moins de 320,000 bactéries par centimètre cube, car ce chiffre représente l'aire d'un champ microscopique obtenu avec l'objectif à immersion 1.9 ou 90X.

Etiologie bactérienne des infections pulpaires:—

En passant en revue la bibliographie sur le sujet, il faut se rappeler constamment et les difficultés que comportent les modalités du prélèvement et surtout la technique utilisée pour l'isolement des bactéries anaérobies présentes.

J'aimerais tout d'abord signaler une publication récente (8) de Prévot qui reste encore aujourd'hui le maître incontesté des anaérobies. Dans une étude de 33 cas d'infections buccales, 50 aérobies ont été isolés contre 35 anaérobies; dans 3 cas, seulement des anaérobies ont été trouvés bien que le contraire soit vrai pour 15 autres cas. De toutes façons, nous retrouvons des noms familiers comme les Staphylocoques, les Streptocoques, Veillonella, Ramibacterium, Fusiformes, Ristella, Bifidobacterium et Treponema que l'on a déjà rencontrés comme hôtes normaux de la bouche.

Aucune de ces infections de la bouche: stomatite ulcéreuse, phlegmon, carie, pyorrhée, abcès, granulome apical, etc., n'a de formule bactérienne définie. "Ce sont", nous dit Prévot, "des associations contingentes de microbes, composées surtout de Staphylocoque et de Streptocoque aérobies, et du côté des anaérobies des représentants de la flore endogène, dite encore flore de Veillon".

"Parmi ces derniers, il est remarquable," continue Prévot, "de ne trouver que des espèces peu ou pas pathogènes en culture pure pour l'animal d'expérience, espèces qui injectées en associations artificiellement reconstituées sont capables au contraire de provoquer chez le lapin et le cobaye des suppurations soit inodores, soit fétides".

En 1950, Appleton (1) passait en revue des publications semblables de Monier à

Paris, de Rodella, de Sommer et d'Erbacher en Allemagne, de Kamer en Suisse et de Nichols aux Etats-Unis; dans des cas de pulpe gangréneuse ou putride, les bactéries suivantes ont été isolées: Ramibacterium, Ristella, Spirochetes, Fusiformes, Cocci anaérobies, finalement Diphtéroïdes et formes filamenteuses. Ici encore, on remarque la prédominance des anaérobies.

Le travail de Monier est particulièrement intéressant car dans deux cas, seulement des anaérobies ont pu être trouvées; cette remarque, confirmée en particulier par Prévot et soutenue par tous les faits relatés ci-dessus, vient en flagrante contradiction avec Grossman qui affirmait récemment qu'il n'est pas nécessaire de cultiver les anaérobies à partir des canaux radiculaires (5).

Pour résumer la question de l'étiologie bactérienne de l'infection pulpaire, disons qu'aucune bactérie en particulier n'est responsable de cette affection; il s'agit plutôt d'associations microbiennes comme on en rencontre dans la gangrène gazeuse, la pyrrhée alvéolaire et l'angine de Vincent. Cette notion de polymicrobie ne doit pas nous surprendre, car elle date du début du siècle et on en connaît de nombreux exemples bien que l'étude en soit assez difficile pour rebuter la majorité des chercheurs.

Pathogénicité de la flore endogène

Comment et pourquoi certains représentants de la flore normale de la bouche, en particulier les anaérobies de la flore endogène de Veillon, deviennent-ils subitement pathogènes alors que, habituellement, ils se montrent inoffensifs? Une telle question ne saurait être résolue, ici mais il importe d'en examiner certains aspects.

Il a été signalé que les espèces bactériennes rencontrées dans la bouche, comme dans la plupart des cavités naturelles de l'organisme, se comportent comme des saprophytes: les uns aident la digestion, d'autres contribuent à l'élaboration des vitamines, etc., etc. De

toutes façons, il ne semble pas que l'on attribue d'emblée un rôle strictement pathogène à ces hôtes normaux. Comme nous l'avons vu avec Prévot, en cultures pures, ces germes sont relativement inoffensifs pour les animaux de laboratoire; en association toutefois, ils peuvent engendrer des infections semblables à celles rencontrées chez l'homme.

Ce sont donc des opportunistes qui ne s'infiltrant dans les tissus qu'à la faveur de facteurs favorisants, comme les accidents et blessures au niveau de la muqueuse, comme aussi le manque de certaines vitamines, comme, enfin, les variations de température et d'humidité qui provoquent une congestion locale amoindrissant les défenses normales à ce niveau. Une fois le foyer infectieux créé, les bactéries se répandent de proche en proche, peuvent même passer dans la circulation générale et donner d'autres foyers à distance: c'est le cas de l'infection de l'apex dont les répercussions sur l'organisme entier sont bien connues. Veillon (11) et Rist (9) en France ont été les principaux protagonistes de cette théorie qui n'a pas encore été démentie.

A ce sujet, il est peut-être intéressant de citer quelques expériences personnelles dont la littérature ne fasse pas mention: dans les cas chroniques d'infection apicale, la formule sanguine montre régulièrement, semble-t-il, une leucopénie marquée: de 3,000 à 4,000 globules blancs, dont les cliniciens ne se préoccupent pas suffisamment.

Récemment encore, la littérature signalait les associations entre les infections dentaires et les maladies des sinus, du nez, des yeux, des oreilles sans oublier les manifestations classiques à distance comme la polyarthrite et les septicémies; même les maladies de peau, y compris l'alopecie, et des troubles gynécologiques ont été rattachés aux foyers infectieux dentaires.

Des expériences fort instructives le démontent. L'application de virus sur la pulpe découverte de singes est suivie de poliomyélite; l'introduction de sérum de cheval au niveau de la pulpe dentaire de

cobayes les sensibilise au choc anaphylactique. Si, comme on l'a vu, des bactéries passent dans la circulation générale à partir de foyers dentaires, l'inverse est également vrai. Des chiens et des cobayes inoculés avec des Staphylocoques montrent à l'autopsie plus de ces bactéries dans leur pulpe dentaire que dans la rate ou la moelle osseuse, alors que le sang est stérile. A la faveur de bactériémies et de septicémies, des bactéries de la circulation générale peuvent donc se fixer au niveau de l'apex et s'infiltrer dans la canal radiculaire.

En résumé, l'origine de l'infection radiculaire peut être double mais en définitive, elle est retracée à la flore endogène normale.

Traitement des infections radiculaires des dents:—

Une fois le diagnostic bactériologique précisé, il importe de diriger le traitement de façon spécifique vis-à-vis les espèces en cause. Mais comme nous avons toujours à faire à une flore mixte polymicrobienne, il faut choisir un agent qui possède une action destructrice vis-à-vis toutes les espèces sans distinction, i.e., que l'agent thérapeutique ne doit pas montrer d'action sélective comme cela se produit assez souvent tant avec les agents chimiques qu'avec les antibiotes dont l'emploi est plus récent, et partant plus difficile.

Bien que plusieurs agents physiques puissent être utilisés avec avantage dans le traitement de ce genre d'infections, il semble que la préférence soit encore donnée aux agents chimiques bien que les antibiotes soient déjà populaires. Parmi les agents chimiques, le formol associé au crésol est assurément celui qui possède l'action la plus large, puisqu'elle s'exerce indifféremment vis-à-vis les bactéries tant à gram-positif qu'à gram-négatif; il détruit aussi les levures et les moisissures. En outre, il n'est pas influencé par les protéines comme le sont les sels des métaux lourds.

On peut dire la même chose de certains alcools, et du chlore. Mais dans le cas

des détersifs ou des agents tensio-actifs, actuellement très en vogue, il faut noter que les bactéries à Gram-négatif résistent plus facilement aux détersifs anioniques (sulfates d'alkyl) qu'aux détersifs cationiques (dérivés de l'ammonium quarternaire).

En ce qui concerne les antibiotiques, il faut prendre garde, d'une part que toutes les bactéries ne sont pas également sensibles à un même agent, d'autre part que le phénomène d'accoutumance chez les bactéries joue rapidement chez certaines espèces; en définitive, seule une analyse bactériologique complète suivie de tests de sensibilité peut guider le traitement spécifique de façon certaine.

Pour les bactéries aérobies, ces épreuves de sensibilité se pratiquent très facilement en déposant à la surface d'une gélose préalablement ensemencée avec la bactérie à l'étude des disques de papier imbibés de quantités connues d'antibiotiques. Des zones d'inhibition plus ou moins marquées témoignent de la sensibilité de l'espèce en cause; on peut ainsi indiquer un choix de médicaments à utiliser.

En ce qui regarde les anaérobies, il semble que très peu d'auteurs se soient préoccupés de déterminer exactement les sensibilités des diverses espèces: on s'est imaginé à tort que les choses devaient fonctionner comme chez les aérobies, i.e., que les bactéries à Gram-positif sont en général sensibles à la pénicilline.

Une méthode mise au point dans mon laboratoire il y a déjà quelques années (4) nous a permis de constater rapidement qu'aucune conclusion chez les aérobies n'était valable pour les anaérobies. En effet, à la liste publiée par Peret en 1951 (l'auteur ne signale pas la technique utilisée) et que nous avons pu confirmer par notre technique des disques incorporés à la gélose profonde, nous pouvons ajouter les *Eubacterium* qui sont résistants à la Pénicilline et à la Terramycine, certains *Clostridium* qui sont résistants à la Pénicilline et à la Streptomycine, enfin, les *Streptocoques* anaérobies qui résistent à la Pénicilline et à l'Auréomy-

cine. Il est alors facile de comprendre que seule l'épreuve au laboratoire peut guider de façon sûre le traitement de n'importe quelle infection. Les associations pénicilline-streptomycine actuellement proposées sont nettement insuffisantes dans certains cas comme notre expérience encore limitée peut le montrer. Une technique simple comme celle que nous avons proposée peut rendre service plus facilement peut-être que celle suggérée récemment par Beerens et Guillaume (2).

Conclusion

La question des infections radiculaires est loin d'être complètement élucidée; plusieurs indications précieuses existent déjà et elles mériteraient d'être exploitées à la lumière des faits nouveaux révélés par les travaux de recherche de ces dernières années. Une plus grande collaboration, par exemple, entre endodontistes et bactériologistes permettraient sans doute d'éclairer rapidement certains points encore obscurcis par des techniques défectueuses et des interprétations erronées.

Références

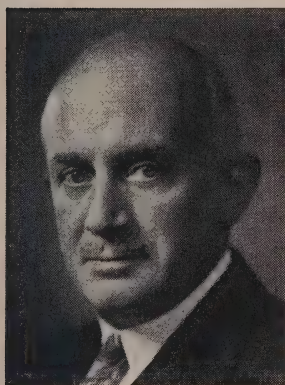
- (1) APPLETON, J. L. T.: "BACTERIAL INFECTION, with special reference to Dental Practice," 4th ed., 1950, Lea and Febiger, Philadelphia.
- (2) BEERENS, H. et GUILLAUME, J.: Technique de Détermination de la Sensibilité des Bactéries Anaérobies aux Antibiotiques par la Méthode des Disques, Annales de l'Institut Pasteur, 1954, 86, 781-5.
- (3) BREED, R. S., MURRAY, E. G. D., and HITCHENS, A. P.: "Bergey's Manual of DETERMINATIVE BACTERIOLOGY," 6th ed., 1948, Williams and Wilkins, Baltimore.
- (4) FREDETTE, V., and TAKAHASHI, I.: Potentiel d'Oxidio-réduction et Isolement des Bactéries anaérobies d'importance médicale, Micro-Hebdo-Actualités, 5 mars 1952.
- (5) GROSSMAN, L. I.: "ROOT CANAL THERAPY," 2nd ed., 1948, Lea and Febiger, Philadelphia.
- (6) PERET, M.: Discussion sur la note de MM. Lebourg, Dioudonnat et Mugnier, Revue de Stomatologie, 1951, 52, 156-158.
- (7) PREVOT, A. R.: "MANUEL DE CLASSIFICATION ET DE DETERMINATION DES BACTERIES ANAE-

- ROBIES," 2ième ed., 1948, Masson & Cie., Paris.
- (8) PREVOT, A. R.: Recherches sur les Associations microbiennes de quelques infections buccales, Revue de Stomatologie, 1948, 49, 1-4.
- (9) RIST, E.: "THESE DE MEDECINE," Université de Paris, 1898.
- (10) WILSON, G. S., and MILES, A. A.: "TOPLEY AND WILSON'S PRINCIPLES OF BACTERIOLOGY AND IMMUNITY," 3rd ed. 1947, Edward Arnold and Co., London.
- (11) VEILLON, M. et ZUBER, A.: Recherches sur quelques microbes strictement anaérobies et leur rôle en Pathologie, Arch. de Médecine expérimentale, 1898, 10, 517-545.

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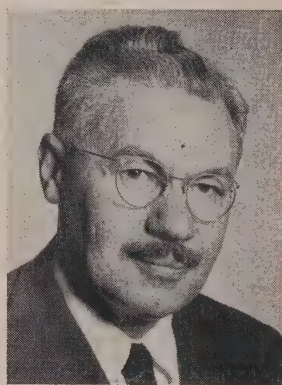


DR HARRY M. SELDIN



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- ancien chef du service de chirurgie buccale de l'Université de New York
- consultant au New York City Cancer Institute, au Harlem Hospital et au Peekskill Hospital
- professeur honoraire de la Faculté de chirurgie dentaire de l'Université de Montréal

le docteur M. A. Pleasure

- chef du service de prothèse au Bronx Veterans Administration Hospital
- assistant professeur de prothèse au College of Dentistry and Oral Surgery, Université Columbia
- directeur de l'American Board of Prosthetic Dentistry.

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**Pour tout renseignement, s'adresser au Doyen,
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La prévention des variations volumétriques de l'amalgame par une manipulation appropriée

par JEAN MALISKA D.D.S., Verdun, Qué.

(suite)

Test No 6 (Epreuve III)

Le malaxage est normal. L'expression du Hg est faite une seule fois, avant le début de l'insertion, avec la force de trois doigts. (petite force).

La condensation est sensiblement faible, c'est-à-dire que le Hg reste en excès dans la masse insérée. En brisant le moule pour libérer l'amalgame, celui-ci s'est brisé aussi. Nous nous sommes servi du morceau le plus long pour faire le test. Les mesures ont été prises après 24 heures, après 4 jours, 19 jours, 26 jours et 35 jours. L'expansion excessive enregistrée après 24 heures s'est maintenue à peu près 20 jours. Après, nous avons enregistré une diminution d'expansion de 5μ .

Test No 7 (Epreuve V)

Vers la fin du malaxage normal, nous avons ajouté une quantité de salive, suffisante pour imbiber toute la masse de l'amalgame. Insertion normale. L'observation s'est étendue sur 34 jours. Les mesures ont été prise après 24 heures, 10 jours, 12 jours, 18 jours, 23 jours, et 34 jours. Les moyennes arithmétiques ont montré une expansion progressive.

Test No 8 (Epreuve XI)

La proportion de Hg a été réduite d'un tiers. Le malaxage a été effectué d'une façon normale et a duré 30 secondes. Nous avons ensuite ajouté la quantité manquante de Hg puis continué le malaxage d'une façon normale. Insertion normale.

Test No 9 (Epreuve IX)

La proportion de Hg a été réduite d'environ un quart. Le malaxage a duré 45 secondes dans le mortier et 30 secondes dans le caoutchouc. La masse d'amalgame obtenue était foncée, n'était ni brillante, ni plastique. La condensation

a été très forte.

Test No 10 (Epreuve VIII)

Malaxage prolongé (surmalaxage) jusqu'à 200 sec., dont 120 dans le mortier et 80 sec. dans le doigt de caoutchouc. Insertion normale.

Tests sur l'écoulement plastique

Test No 1 (Epreuve II)

Sa description est faite plus haut, à titre d'exemple sur les tests de ce genre. Ajoutons ici que le malaxage et l'insertion sont normaux sauf que la première insertion, riche en Hg, (au fond du moule) est plus considérable que normalement. La condensation est normale.

Test No 2 (Epreuve XIV)

Le malaxage est fait au moyen du malaxeur mécanique, par son propriétaire et suivant les méthodes de celui-ci. L'amalgame est brillant, homogène et plastique. La condensation est très forte.

Test No 3 (Epreuve XIII)

La proportion de Hg est réduite d'un quart. Le malaxage est normal pendant 70 sec. (mortier, plus caoutchouc), mais la masse est encore trop sèche et non plastique. Alors, nous additionnons la quantité manquante de Hg, et même quelques gouttes de plus. Le malaxage est ensuite continué 5 sec. dans le mortier et 5 sec. dans le caoutchouc. La masse devient brillante et plastique. Condensation très forte.

Test No 4 (Epreuve XII)

La proportion de Hg est réduite d'un tiers. Le malaxage est normal mais après 30 sec., nous additionnons un peu de Hg, puis continuons le malaxage jusqu'à 45 sec. (au mortier). Ici, nous additionnons encore une fois quelques gouttes de Hg et, après quelques tours de pilon, nous transportons la masse dans le doigt de caoutchouc pour y continuer le malaxage pendant 30 sec.

Cela fait en tout à peu près 100 sec. de malaxage. La masse devient brillante et plastique. La condensation est plus forte que la normale.

Test No 5 (Eprouvette I)

La proportion de Hg est augmentée d'un quart. Le malaxage est normal. La condensation est faible. L'amalgame contient un excès considérable de Hg. Après 24 heures, nous avons constaté un écrasement excessif, l'éprouvette s'est gonflée au milieu (comme un baril).

Nous allons ajouter encore une courte description de deux tests supplémentaires, concernant l'effet de chaleur sur un amalgame normal, vieux d'un mois. Les éprouvettes ont été préparés de la même façon que celles pour l'expansion spontanée. Dans le premier cas, une éprouvette a été mis dans l'eau chaude à 75°C. (167°F.), pendant deux minutes. A l'aide du micromètre, nous avons constaté une expansion de 4 μ /cm, cette expansion n'existait plus après 5 minutes de refroidissement.

Dans le deuxième cas, l'éprouvette a été mise dans l'eau chaude à 80°C. (176°F.) pendant 2½ minutes. Nous avons constaté déjà, après 1½ minute, l'apparition d'une rosée de Hg (probablement) qui s'est agrandi en gouttelettes considérables; celles-ci se sont réunies en une surface brillante après 2½ minutes. Il n'a pas été possible de prendre des mesures à cause de cette présence de Hg aux surfaces exposées de l'amalgame. Après 30 minutes, le Hg a disparu. Apparemment, il s'est résorbé dans l'amalgame.

III—Discussion des résultats des tests

D'abord, il faut tenir compte qu'aucun des résultats obtenus ne doit être considéré comme rigoureusement précis parce que les résultats dépendent non seulement de la prise des mesures, qui a été mécanique et contrôlable, mais aussi: 1) de l'uniformité de la manipulation en préparent les éprouvettes. Cette manipulation a été surtout manuelle, donc aussi uniforme que nos sens le per-

mettent;

- 2) des moyens (instruments) employés, qui sont assez simples;
- 3) du nombre de tests qui n'est pas assez complet;
- 4) du peu d'expérience que nous avons en laboratoire.

La préparation des éprouvettes, en général, ressemble à la préparation des amalgames en clinique, sauf que les erreurs commises en clinique sont minimes, involontaires ou irréflechies; ici, elles sont accentuées et préméditées et jouent le rôle de paramètres importants.

Nous pouvons dire que les résultats de nos tests indiquent l'influence des facteurs personnels dans la manipulation clinique de l'amalgame. Il est à regretter que la série de nos tests soit forcément incomplète: chaque test exige des préparatifs et une exécution soignés et prend un temps assez considérable. Des tests plus nombreux permettent de tirer des conclusions encore plus sûres sur les détails de la manipulation qui influencent les changements volumétriques de l'amalgame. Nous essayerons donc de donner un petit aperçu de ce qui a été fait.

Tableau No 1

Ce tableau résume les résultats des tests de l'expansion spontanée. Les trois premiers essais (*tests No 1, 2 et 3*) sont faits pour constater la valeur de la manipulation manuelle normale, en employant trois méthodes différentes. Le malaxage dans un doigt de caoutchouc (test No 3) nous a donné l'expansion la plus voisine de l'optimum (qui est de 8 microns/cm après 24 heures).

Le test No 4 est le seul où le malaxage a été fait avec le malaxeur mécanique. Le résultat ne diffère pas beaucoup de celui des tests No 1 et No 2. Probablement, une très forte condensation a diminué l'expansion qui est à peu près la moitié de l'optimum. Une série de plusieurs tests permettrait de se familiariser avec la méthode mécanique et de trouver la meilleure façon de l'appliquer à notre amalgame "Aristoloy."

TABLEAU No 1—Variations volumétriques spontanées
(expansion requise: 3-13 micr./cm après 24 h.)

No du test	No de l'éprouvette	Sujet du test	Longueur moyenne en microns, après 15 minutes (à partir de la fin du malaxage)	Longueur moyenne en microns, après 24 heures	Longueur moyenne en microns, après plus de 24 heures	Variation absolue en microns, après 24 h. (+ -)	Variation absolue en microns, après plus de 24 heures	Variation, en microns, pour 1 cm de longueur, dans le temps donné	Conclusion pratique
1	IV	manipulation normale (enseignée)	22575	22586	—	+11	—	+ 4.9 micr./cm après 24 h.	Bien
2	VI	manip. norm. (mortier 45 sec., doigt caout. 30 s.)	21887	21897	après 10 j. 21894	+10	après 10 j. + 7	+ 4.6 micr./cm après 24 h.	Bien
3	VII	manipul. normale (75 s. avec doigt de caoutch.)	21801	21817	après 10 j. 21817	+16	après 10 j. +16	+ 7.3 micr./cm après 24 h.	Bien
4	XV	malaxeur mécanique (condensation très forte)	20586	20595	—	+ 9	—	+ 4.5 micr./cm après 24 h.	Bien
5	X	mortier avec restant de vieux amalgame	22742	22757	après 20 j. 22755	+15	après 20 j. +13	+ 6.6 micr./cm après 24 h.	Bien
6	III	Hg en excès (condensation faible)	13001	13036	après 1 mois 13031	+35	après 1 mois +30	+27 micr./cm après 24 h.	Expansion excessive
7	V	contamination par salive (manipulation normale)	17171	17185	après 10 j. 17194 après 1 mois 17217	+14	après 1 mois +46	+27 micr./cm après 34 j.	Expansion excessive retardée
8	XI	addition supplémentaire de Hg	19976	19997	après 2 jrs 19995	+21	après 2 jrs +19	+10.5 micr./cm après 24 h.	Bien
9	IX	trou peu de Hg (condensation très forte)	22655	22657	après 4 jrs 22656	+ 2	après 4 jrs + 1	+ 0.9 micr./cm après 24 h.	Contraction
10	VIII	surmalaxage (200 sec.)	25286	25287	après 22 jrs 25287	+ 1	après 22 jrs + 1	+ 0.4 micr./cm après 24 h.	Contraction

TABLEAU No 2—Ecoulement plastique (Flow)

Ecrasement permis: 4% maximum.

No du test	No de l'éprouvette	Sujet du test	Longueur moyenne, en micr., après 3 h.	Longueur moyenne, en micr., après 24 h. d'écrasement	Variation absolue en microns après 24 h.	Variation relative, en %, après 24 h.	Conclusion pratique
1	II	manipulation normale (1ère couche riche en Hg)	8032	7729	- 303	- 3.7%	Bien
2	XIV	malaxeur mécanique (condensation très forte)	8480	8295	- 185	- 2.2%	Bien
3	XIII	addition supplém. de Hg (condensation très forte)	9755	9405	- 350	- 3.5%	Bien
4	XII	addition supplém. de Hg. malaxage 100 sec. (condensation forte)	8985	8515	- 380	- 4.2%	Douteux
5	I	Surplus de Hg. (condensation faible)	8277	6675	-1602	-19.3%	Amalgame trop faible

Le test No 5 a été fait pour connaître l'influence de l'expansion de l'amalgame après une manipulation normale, sauf que le mortier a été lissé par deux cents tours de pilon à vide. A notre grande surprise, le résultat est meilleur que dans les tests No 1 et No 2, pour lesquels nous avons employé un mortier propre et dépoli. Peut-être, les 200 tours à vide n'ont-ils pas assez poli le mortier, ou encore le résidu sus-mentionné a été trop pauvre pour exercer une influence néfaste sur l'amalgame. Si le malaxage dans le mortier a été moins bon, la continuation du malaxage dans le caoutchouc l'a peut-être compensé en partie. Il faudrait faire plusieurs tests avec le même alliage pour préciser davantage ce problème. De plus, il faudrait s'assurer que la solidité du produit n'est pas affectée par la présence du vieil amalgame avant de se prononcer sur l'intérêt du procédé.

Le test No 6 nous a montré une forte influence d'un grand excès de mercure dans l'amalgame. Une énorme expansion s'est produite après 24 heures et s'est maintenue plusieurs jours. Après environ trois semaines, nous avons constaté une diminution de l'expansion de 5 microns mais cela est insignifiant, l'expansion est restée toujours excessive.

Avec le test No 7, nous avons constaté la présence de Zn dans notre alliage "Aristology" parce que, de la salive mélangée à l'amalgame, pendant la manipulation, a provoqué une expansion excessive retardée. Après 34 jours, elle était aussi grande que celle du test No 6 (excès de Hg) après 24 heures. Il est intéressant d'observer que l'effet de la salive n'a pas été sensible après 24 heures: en effet, nous avons obtenu une variation absolue de ± 14 microns, correspondant à ± 8.2 microns/cm. Mais après 10 jours, nous avons eu déjà 13.5 microns/cm. (la limite permise est déjà légèrement dépassée).

Le test No 8 a eu pour but de constater l'effet d'une addition supplémentaire de Hg pendant le malaxage. Nous avons obtenu une légère augmentation de l'expansion au-dessus de l'optimum, mais encore dans les limites permises. Il faudrait faire plusieurs tests pour préciser l'influence en question.

Le test No 9 nous a permis de constater la contraction d'un amalgame contenant une proportion de mercure sensiblement inférieure à la normale. Nous disons "contraction" parce que l'expansion obtenue est plus basse que la plus petite expansion requise.

Le test No 10 a démontré l'importance du temps du malaxage. Nous avons obtenu une "contraction" (dans le sens du test No 9) de l'amalgame, parce que le temps de malaxage de 200 sec. dépasse largement la durée normale du malaxage.

En regardant le tableau No 1, troisième colonne à droite, nous pouvons constater que, dans tous les cas où les mesures ont été reprises après plus de 24 heures, il y a eu diminution de l'expansion ou, du moins, il n'y a pas eu d'augmentation, abstraction faite du cas de la contamination par la salive (test No 7).

Passons maintenant au tableau No 2 concernant l'écoulement plastique.

Le test No 1 nous a donné un amalgame très près de la limite du plus grand écrasement permis, qui est de 4%. Probablement, la présence d'une quantité considérable d'amalgame riche en Hg dans une extrémité de l'éprouvette (auparavant au fond du tube de verre), a augmenté son écoulement plastique malgré que le reste de la manipulation ait été normal.

Le test No 2 pour lequel le malaxage a été fait avec le malaxeur mécanique, nous a donné un amalgame plus dur que celui manipulé manuellement (test No. 1.) On suppose que la très forte condensation a pu réduire l'écrasement.

Les tests No 3 et No 4 comportent une addition supplémentaire de Hg. Pour tous les deux, la condensation a été plus forte que la normale. Il semble que l'addition du Hg soit moins dommageable que la prolongation du malaxage. Il suffit de comparer les résultats de ces deux tests pour constater que le malaxage de 100 sec. (test No 4) a pu augmenter l'écrasement jusqu'à 4.2%. Il faudrait faire un plus grand nombre de tests pour confirmer ou pour infirmer une telle supposition.

Le test No 5 nous a confirmé encore une fois que la présence de Hg en excès considérable dans l'amalgame, le rend inutilisable. (Voir tableau No 1, test No 6) Dans ce cas-ci, nous constatons un écoulement plastique excessif (19.3%)

Tests sur l'effet de la chaleur

En ce qui concerne l'effet de la chaleur sur l'amalgame (*deux tests supplémentaires* mentionnés antérieurement), nous pouvons dire que l'amalgame peut souffrir et se changer si la température atteint près de 80° C. (176° F.) L'apparition de la rosée brillante (probablement Hg et solutions) sur sa surface, est causée peut-être par le déclenchement des réactions chimiques quand leur équilibre est rompu par la chaleur, ou bien par la dilatation du Hg libre qui existe toujours dans une certaine proportion dans tout amalgame (Hg a une grande expansion thermique).

En tous cas, l'expulsion d'une partie des constituants de l'amalgame par la chaleur va donner la diminution de son volume.

IV—Conclusions

En considérant nos deux tableaux, nous constatons facilement que l'excès de Hg libre, la contamination avec de la salive, la quantité insuffisante de Hg et le surmalaxage ont provoqué les variations volumétriques excessives de l'amalgame. Ici, nous tirons nos conclusions principales:

I.—Pour prévenir l'expansion excessive, il faut:

- a) éviter la présence d'un excès de Hg libre dans l'amalgame, par l'insertion et la condensation normales (décrites dans la description du test No 1, éprouvette IV);
- b) protéger l'amalgame de la contamination par la salive pendant le malaxage et l'insertion.

II.—Pour prévenir la contraction, il faut:

- a) que la proportion de mercure ne soit pas moindre que la normale;
- b) que le malaxage s'achève environ en 75 sec. ou lorsqu'on s'aperçoit que la masse est devenue brillante, plastique et adhérente aux parois du mortier;
- c) que le polissage de l'amalgame, qui se fait après plus de 24 heures, n'élève pas la température au-dessus de 75° C. (167° F.), sinon on assiste à une perte de ses constituants (rosée à la surface, survenant à 80° C. (176° F.))

III.—Pour prévenir un trop grand écoulement plastique, il faut:

- a) éviter l'excès de Hg dans l'amalgame. (Voir la conclusion I a));
- b) éviter le surmalaxage.

Nous ajoutons encore d'autres conclusions, moins affirmatives:

- 1) L'addition de Hg supplémentaire pendant le malaxage augmente l'expansion et l'écoulement plastique.
- 2) Le malaxage normal dans le doigt de caoutchouc donne l'expansion la plus voisine de l'optimum.
- 3) Une grande quantité d'amalgame riche en Hg, mise au fond de la cavité, conduit à un plus grand écoulement plastique.
- 4) Le malaxeur mécanique diminue l'écoulement plastique.

Nous sommes heureux de constater que nos conclusions ne contredisent pas celles que nous avons exposées à la fin du résumé des auteurs. Peut-être une série plus complète de tests nous permettrait d'arriver à des conclusions plus détaillées et plus nombreuses.

BIBLIOGRAPHIE

- (1) Skinner: The Science of Dental Materials, 3rd ed. p. 296.
- (2) Idem.
- (3) Skinner: The Science of Dental Materials, 3rd ed. p. 298, 302.
- (4) Black: Technical Procedures, Vol. 2, 1947, p. 7.
- (5) Skinner: The Science of Dental Materials, 3rd ed. p. 302.
- (6) Black: Technical Procedures, Vol. 2, 1947, p. 6.
- (7) Skinner: The Science of Dental Materials, 3rd ed. p. 306.
- (8) Green, Simon and Shelman: Manipulation of Amalgam, J.A.D.A. Vol. 30, 1943, p. 1176.
- (9) Skinner: The Science of Dental Materials, 3rd ed. p. 306.
- (10) Skinner: The Science of Dental Materials, 3rd ed. p. 305.
- (11) Skinner: The Science of Dental Materials, 3rd ed. p. 376.
- (12) Green, Simon and Shelman: Manipulation of Amalgam, J.A.D.A. Vol. 30, 1943, p. 1175.
- (13) Skinner: The Science of Dental Materials, 3rd ed. p. 28.
- (14) Green, Simon and Shelman: Manipulation of Amalgam, J.A.D.A. Vol. 30, 1943, p. 1175.
- (15) Skinner: The Science of Dental Materials, 3rd ed. p. 307.
- (16) Idem.
- (17) Idem.
- (18) Skinner: The Science of Dental Materials, 3rd ed. p. 307, 309.
- (19) Skinner: The Science of Dental Materials, 3rd ed. p. 309, 310.
- (20) Green, Simon and Shelman: Manipulation of Amalgam, J.A.D.A. Vol. 30, 1943, p. 1176.
- (21) Skinner: The Science of Dental Materials, 3rd ed. p. 318.
- (22) Skinner: The Science of Dental Materials, 3rd ed. p. 320.
- (23) Skinner: The Science of Dental Materials, 3rd ed. p. 311, 313.
- (24) Green, Simon and Shelman: Manipulation of Amalgam, J.A.D.A. Vol. 30, 1943, p. 1176.
- (25) Green, Simon and Shelman: Manipulation of Amalgam, J.A.D.A., Vol. 30, 1943, p. 1176.
- (26) Sweeney: Silver Amalgams—The Mechanical Way, 1949, p. 2.
- (27) Skinner: The Science of Dental Materials, 3rd ed. p. 322.
- (28) Idem.
- (29) E. Carl Miller: Year Book of Dentistry, 1952, p. 405.
- (30) Skinner: The Science of Dental Materials, 3rd ed. p. 323.
- (31) E. Carl Miller: Year Book of Dentistry, 1952, p. 400.
- (32) Sweeney: Silver Amalgams—The Mechanical Way, 1949, p. 4.
- (33) Idem p. 5.
- (34) Research Commission: Expansion of Amalgams, J.A.D.A., Vol. 27, 1940, p. 196.
- (35) Skinner: The Science of Dental Materials, 3rd ed. p. 324.
- (36) Skinner: The Science of Dental Materials, 3rd ed. p. 325.
- (37) E. Carl Miller: Year Book of Dentistry, 1952, p. 405.
- (38) Idem.
- (39) Skinner: The Science of Dental Materials, 3rd ed. p. 376, 377.
- (40) Skinner: The Science of Dental Materials, 3rd ed. p. 377.
- (41) Idem.
- (42) Skinner: The Science of Dental Materials, 3rd ed. p. 376, 377.
- (43) Idem.

Nouvelles de l'Association

Le docteur P. G. Anderson devient le nouveau président de l'A.D.C.

A la réunion annuelle de l'A.D.C., tenue à St-André-sur-mer, en septembre dernier, le docteur P. G. Anderson est entré en fonction comme nouveau président. Le docteur Anderson fit ses études à l'Université de Toronto et débuta en clientèle dans cette ville en 1928. Il est né du Nouveau-Brunswick et y recut sa formation primaire; par une curieuse coïncidence, il devint président de l'A.D.C. dans sa province d'origine. Avant d'étudier la dentisterie, il avait obtenu son diplôme d'instituteur du Mount Allison University. Professeur de dentisterie restaurative, à l'Université de Toronto, il fait partie du Sénat de cette Université et il s'est toujours directement intéressé aux organisations dentaires.

Nommé membre honoraire

Le docteur Frank A. Godsoe, le membre le plus âgé et un des plus distingués de la profession dentaire du Nouveau-Brunswick, a été nommé membre honoraire de l'Association dentaire canadienne à sa réunion annuelle.

Le docteur Godsoe est né à St-Jean, Nouveau-Brunswick, le 15 janvier 1862 et il a eu une carrière remplie et distinguée. Il a débuté en faisant du journalisme au Evening Globe, de St-Jean. En 1880, il fit de l'apprentissage en dentisterie chez le vieux docteur Griffith à St-Jean. Plus tard, il étudia au Boston Dental College où il obtint son diplôme en 1883 après avoir exercé à Boston durant un an; il revint à St-Jean pour y pratiquer jusqu'à ces dernières années, quand il prit sa retraite. Durant la première grande guerre, le docteur Godsoe fit du service dans l'armée. Durant

quarante ans, le docteur Godsoe remplit la fonction de registraire et de secrétaire de la Société dentaire du Nouveau-Brunswick. En lui décernant son diplôme, le docteur Coughlan déclara que le docteur Godsoe était un des pères de la dentisterie canadienne. A plusieurs reprises, il a été honoré par ses confrères. Depuis qu'il a pris sa retraite, il habite Hampton, à quelques milles de St-Jean.

Faits saillants de la réunion annuelle de l'A.D.C. de 1954

—Le docteur R. R. McIntyre, de Calgary, Alberta, devient président-élu.

—La réunion de 1957 aura lieu à Winnipeg. Le congrès aura lieu en juin. On en annoncera les dates plus tard.

—On continuera encore pour deux ans l'enquête dans les facultés dentaires.

—L'Association se prononce encore en faveur de la fluoruration de l'eau des aqueducs.

—On a offert à l'Association un maillot fait de bois provenant de toutes les provinces du Canada.

—On a réaffirmé avec vigueur le besoin qu'il y a d'accroître les facilités d'enseignement dentaire au pays.

—On fait part aux membres d'un plan que la Croix-Bleue a adapté à leurs besoins.

—On a encore recommandé le plan d'assurance de pension-santé de l'A.D.C.

—On a prié les sociétés dentaires régionales d'aider au recrutement d'étudiants qualifiés pour les facultés dentaires.

—L'Association a recommandé la publication de l'enquête économique de 1954.

—On a autorisé la nomination d'un comité d'enquête sur certaines irrégularités touchant les dentistes qui s'occupent d'hygiène dentaire publique.

—On a permis la publication dans le Journal des recommandations du Comité d'Éthique professionnelle.

—On a recommandé la nomination d'experts en compilation de statistiques pour préparer un rapport sur l'aspect économique de la profession dentaire.

—On a adopté des nouveaux énoncés de politique au sujet de plans pré- et post-payés pour les services dentaires.

—On a approuvé une nouvelle politique au sujet de la dentisterie industrielle.

—L'Association endosse le travail de la Fédération dentaire internationale.

—On approuvé l'organisation d'un cours de pédagogie à l'intention des professeurs des facultés dentaires.

—On a décidé d'inviter l'Association américaine des facultés dentaires à tenir sa réunion au Canada.

—On a félicité l'Association dentaire d'Alberta pour avoir organisé une semaine d'hygiène dentaire durant 1954, tout en encourageant les autres provinces à faire de même.

—On a approuvé avec enthousiasme les progrès réalisés dans le domaine des bourses d'études pour former des compétences en recherches et on a demandé de poursuivre le travail commencé.

—On s'est prononcé en faveur du principe qui consiste à donner des licences aux techniciens en autant que cette façon de faire ne vienne pas en contradiction avec les données de l'étiquette professionnelle.

—On a demandé d'étudier les relations qui existent entre les services dentaires hospitaliers et l'enseignement dentaire.

—On a adopté une résolution désignant sous le nom de "chirurgie buccale" ce domaine de la dentisterie.

—On a approuvé un programme pour faire l'éducation des membres sur la dentisterie organisée.

—On a autorisé la préparation de collections de pamphlets à l'usage de ceux qui veulent écrire un article ou préparer une conférence.

—On a approuvé les règlements soumis par la section de chirurgie buccale (Société canadienne des chirurgiens buccaux).

—Le docteur Leuman Waugh a présenté la conférence Mémorial George Grieve.

—Le docteur Leslie M. Fitzgerald, président de l'Association dentaire américaine, était le représentant officiel de cet organisme.

"Facts on Fluoridation"

—On peut se procurer une copie révisée de cette publication: une copie, gratis. Pour certains nombres: .25 par copie.

Ce fascicule a obtenu un succès de librairie inespéré; on répondra aux commandes considérables aussitôt que possible.

Bourses du Conseil National des Recherches

On annonce qu'on peut s'adresser à l'Association dentaire canadienne, 234 rue St-Georges, Toronto, pour avoir des détails sur les règlements et sur l'octroi des bourses du Conseil National de Recherches; on peut aussi s'y procurer des formules de demande. Les dates ultimes pour ces demandes sont le 15 octobre et le 1er février.

Nouveau doyen pour Dalhousie

Depuis le 1er septembre 1954, la faculté dentaire de l'Université Dalhousie a un nouveau doyen, le docteur James D. McLean. Il succède au docteur J. Stanley Bag-nall. Le docteur McLean est né à Régina, Saskatchewan et il a fini ses études à l'Université de Toronto, en 1942. Immédiatement après sa graduation, il fit du service dans l'armée. Après la guerre, il établit son bureau à Edmonton et devient membre du corps professoral de la faculté dentaire de l'Université d'Alberta jusqu'à l'année dernière, où il permuta à Dalhousie, Halifax, N.-E.

Occlusion in preventive dentistry*

by W. K. SHULTIS, D.D.S., Toronto.

Dentistry today is becoming more and more a science in which the emphasis is placed on prevention. No longer do we consider the loss of the human dentition inevitable. We assure our patients that with oral cleanliness, proper diet and frequent dental care they need no longer fear the day when, teeth being lost, they become dental cripples forced to rely on artificial teeth as a crutch to the end of their days. We, as dentists, believe this, particularly where the person has had good dental care from childhood.

Prevention combines early recognition and prompt action to stop the conditions that would otherwise occur. Now what are these dentition-destroying conditions that we are trying to prevent? One of course is dental caries. We are trying by such means as diet, fluoridation, public education and regular dental care to reduce the incidence of caries. The second condition affects the tissues surrounding the tooth. We all know that if gingivitis

is neglected and allowed to deteriorate into a more severe periodontal condition, a tooth will be lost just as surely as if a cavity is neglected. Education along the lines of diet and better mouth care is helping us to take a preventive approach to periodontal problems.

In between caries on the one hand and periodontal conditions on the other we find a condition that if neglected contributes to both the others. I refer to malocclusion. I hesitate to use this word because it invariably gets linked up with the word Orthodontics and so many dentists want to shy away from their Orthodontic responsibilities. However, in spite of any misgivings many dentists may have for this branch of dentistry, we must admit that in order to practise dentistry conscientiously we can no more disregard malocclusion than we can disregard caries or periodontal conditions. When we accept the privilege of practising dentistry we must also accept the responsibility of advising our patients in all branches of our chosen profession.

Getting back to prevention, I should like to confine these remarks to a few basic

*Presented to The Academy of Dentistry, Toronto, March 11, 1954.

observations that we can all make use of in examining our patients. Please pardon me if some of these observations appear ridiculously elementary and obvious.

At birth the baby's tongue occupies the whole oral cavity. As the first teeth begin to erupt they are at the mercy of the tongue on one side and the lips on the other. The alveolar bone and tissues surrounding the teeth are quite plastic and respond readily to even the lightest forces. The forces we ordinarily think of are those of the tongue from within the mouth and the lips and cheeks from without. To these we can add forces arising from habits. Now if the inner and outer forces applied to the dental arches are in normal balance (referred to as the lips-tongue muscle balance) we find that the dental arches develop properly and the teeth have a much better chance of erupting into normal occlusion. If, however, due to improper feeding as an infant, abnormal tongue and lip positions are developed, we can expect a resulting difference in arch form and tooth positioning. At this infant stage of development it is wise for the parent to try and obtain infant lip closure by frequently pinching the baby's lips closed during sleep. Closed lips will help to prevent both the origin and effects of tongue habits. Tongue habits almost invariably appear in children with open lips or where a sucking habit exists or has existed. Since about 85% of the lateral development of the dental arches at the cuspid region is completed by age 5, it is wise for us to advise parents to prevent or discourage the formation of sucking or other habits that may tend to apply undesirable forces to the dental arches during their early and formative years. Simple exercises are often of great benefit in restoring normal lip closure and proper tongue positioning.

Where muscular imbalance has been present in infancy we often find a narrow maxillary arch. It may frequently be noted, when the teeth are in occlusion, that the mandibular deciduous cuspids are

locked distally to the maxillary cuspids. By discing the four deciduous cuspids to free the bite and allow the mandible to move forward in occlusion without cuspid interference, we are able to encourage the normal forward growth of the mandible and prevent many distocclusions from developing. Of course, at the same time, an endeavour must be made to re-establish, by means of exercises, normal lip closure and tongue positioning if such does not exist.

One of the real problems we are called upon to decide is if there is enough space in the arches for the secondary dentition. Until a few years ago we had to guess or try to measure teeth in x-rays. Now as a result of research on tooth size we can accurately estimate the arch length required for cuspids and bicuspid in each of the four lateral quadrants. For each mandibular lateral quadrant we require 10 millimeters plus $\frac{1}{2}$ of the sum of the widths of the four lower anteriors as measured separately using a boley gauge. Each maxillary lateral quadrant requires 11 millimeters plus $\frac{1}{2}$ of the sum of the widths of the four lower anteriors. By using a sharpened boley gauge we are able to measure the mesio-distal widths of each of the four lower anteriors and also the distances from the mesial of first molars to the distal of the properly aligned secondary lateral incisors. Where the anterior teeth are crowded or lapped we measure from the mesial labial of one deciduous cuspid to the mesial labial of the other and find how short of arch length we are for the proper alignment of the four anteriors. The extra space required for proper anterior alignment must come from the lateral quadrants as measured from mesial of the first molar to the mesial of the deciduous cuspid. It is estimated that each first molar drifts or moves mesially about 1-1½ millimeters between the time the second deciduous molar is shed and the second bicuspid erupts into occlusion. Therefore, unless each lateral quadrant measures 1½ millimeters in excess of the arch length re-

quired for the eruption of the cuspid and bicuspid plus any extra space needed for anterior alignment, we are faced with the probability of having to move the molars distally or at least of preventing the mesial drift of the molars during the period of bicuspid eruption. It takes but a moment during patient examination to make these few measurements and estimate the relation of tooth size to arch length. The information so obtained can be very valuable to us in evaluating and prognosing the future occlusion.

Research carried out here at our own University of Toronto a few years ago has demonstrated the importance of the order in which the secondary teeth erupt. Far fewer malocclusions were found where the order of eruption was as follows:

6 1 2 4 5 3 7

Numerical

6 1 2 3 4 5 7

symbols are used when referring to teeth in their eruption sequence e.g.—1, central incisor; 2, lateral incisor; 7, second molar etc. It is desirable to find each mandibular tooth erupting a short time before the corresponding maxillary tooth. If, however, we find the maxillary first molar erupting ahead of the mandibular first molar we know that the anterior growth of maxilla is ahead of the mandible and that a disto-occlusion will probably develop. When this is noted the deciduous cuspids should be reduced incisally until they offer no interference when the mandible is moved forward with the teeth in occlusion. In these cases the patient should be instructed to do myofunctional exercises as outlined by Dr. A. P. Rogers in the Journal of the American Dental Association, January 1936. Any variance from the desired order of eruption should be a signal to us to be on the watch for the possible development of a malocclusion.

The majority of malocclusions become obvious during the mixed dentition stage and this is the time when we have to be most observant and try to appreciate the importance of what we see. Many diffi-

culties arise due to the incorrect timing of eruption. Normally, in the mandible, the first deciduous molar is shed just as the cuspid is erupting and the second deciduous molar is shed just as the first bicuspid is erupting. We know that the mandibular secondary cuspid requires more arch space than the deciduous cuspid. Unless the first deciduous molar is shed as the cuspid erupts we may find the cuspid crowded out of the arch. In such cases of poor eruption timing we can disc the mesial of the deciduous molar to assure the secondary tooth sufficient arch length to erupt into. Since the second deciduous molar is larger than the second bicuspid we can still end up with sufficient space for the second bicuspid eruption. In the maxillary arch it is often desirable to disc the mesial of the second deciduous molar to allow the first bicuspid to erupt further distally and thereby occlude correctly with the lower first bicuspid.

We occasionally see a six year molar erupting gingival to the distal of the second deciduous molar. Frequently in such cases we can insert a separating wire which when tightened, will tip the molar distally and enable it to erupt into its correct position. Sometimes the distal gingival of the deciduous molar may be disced to form a sloping guide for the erupting six year molar. Occasionally a copper band can be fitted over the disced deciduous molar to act as a guide for the six year molar. By intermittent use of separating wire we can often aid the eruption of second molars and occasionally third molars.

About eight years of age we should be able to feel the labial bumps of the secondary cuspids apically and slightly distal to the lateral incisors. If these bumps cannot be felt it is wise to x-ray and by means of Clark's law determine if perhaps the cuspids are erupting lingual to the deciduous cuspids. If so, the extraction of the deciduous cuspid or cuspids may be contemplated.

The premature loss of a deciduous tooth

is always an unfortunate occurrence. Occasionally we are called upon to deal with just such a situation. It is first wise to x-ray and definitely establish the presence of a successor. By use of the boley gauge we can quickly establish whether an excess of arch length over tooth size will permit a certain amount of space closure without causing a malocclusion. Upon checking the teeth in occlusion we occasionally find a tooth in the opposite arch has over erupted and acts as a natural space maintainer by inhibiting the anterior drift of the tooth or teeth posterior to the space. If for either of these reasons no retainer is indicated, then frequent checks should be made to reassess the condition. If a fixed space maintainer is contemplated the deciduous teeth involved should be checked to estimate if their life expectancy is sufficient to hold the space as long as desired. If this is unlikely then either a removable or arch type of space maintainer is indicated. However, when we get right down to it there is no space maintainer as useful as a good amalgam filling before the deciduous tooth is lost.

Over retained deciduous teeth, as a rule, should be extracted. We decide this generally by comparison with the similar tooth in the corresponding quadrants. If by this comparison we feel the deciduous tooth is over retained, an x-ray is indicated. In the x-ray we note if the deciduous roots are ankylosed as judged by the presence or absence of the periodontal membrane about the deciduous roots. If the root of the secondary tooth is beginning to form and the deciduous tooth is still solid it is time to extract the deciduous tooth. If a secondary tooth is being deflected into an undesirable position the deciduous tooth causing this deflection may be extracted even before it would normally be shed. An example of this is when we find a lingually erupting maxillary cuspid.

In cases of the ectopic loss of deciduous cuspids we should measure arch length and decide if sufficient arch length can

be regained for full eruption or whether a lack of arch length indicates the extraction of certain secondary teeth will be necessary. In the former case an appliance would probably be indicated but in the latter case treatment might be postponed for some time.

The anterior cross bite is a problem with which we are frequently confronted. If this is recognized early it can often be corrected by holding an outward finger pressure on the maxillary tooth and at the same time force the chin back with the palm of the hand with the thumb creating a force on the labial of the lower anterior tooth. After 4 or 5 minutes of this pressure the child is instructed to curl the tongue back into the throat and close slowly while the pressures are still being applied. In many cases the mandibular anterior tooth will now bite just lingual to the maxillary tooth. Pressure is continued on the chin for another couple of minutes and the child is instructed to clench the teeth tightly. The parent is instructed how to help the child get the teeth into this position and how to secure a rubber dam sheet, folded in two, over the point of the chin and tied over the top of the head. This is worn for 3 or 4 nights to help keep the teeth in their new position. The child's co-operation is needed for a few days in getting and holding the teeth in their new position. If the child is older and the roots of the teeth in cross-bite are completely formed, a simple appliance may be necessary to accomplish the correction and prevent a worse malocclusion developing later. A simple band on the maxillary cross-bite tooth with a soldered lingual extension carried below the incisal will cause the mandibular tooth to be moved lingually and the maxillary tooth labially when the child closes upon it. A cast crown with extension may be used instead of a band. This is quite easy to make and is usually very effective in achieving the desired result. A simple plastic incline on the mandibular anterior accomplishes the same result by moving the maxillary

tooth only. If the overbite is less than two millimeters or if the anterior tooth in cross-bite is crowded then the cross-bite should be corrected by use of springs off a maxillary lingual arch so as not to open the bite during correction of the malocclusion. The cross-bite of a single molar may often be quite simply corrected by means of cross elastics to hooks on upper and lower molar bands.

The space between maxillary central incisors is often cause for concern to parents of our child patients. Sometimes this space will diminish with the eruption of the lateral incisors and finish closing as the cuspids erupt. In other cases we find a band of muscle, the frenum labium, having its attachment slightly lingual to the space. When the lip is raised and the frenum made taut, a blanching can be seen between the central incisors. In these cases the space may not remain closed between the centrals without surgical interference. When should this frenectomy be done? The centrals and laterals should be brought together during the eruption of the cuspids. If the frenum does not resorb during this closure then the frenectomy should be performed. The centrals should be held together after the operation until the cuspids have finished erupting. Where the maxillary anterior teeth are smaller than average and do not fill the cuspid to cuspid space, we often find that the centrals may again space slightly in spite of the frenectomy. In such cases we can only hold the centrals and laterals together for quite a long time and explain to the parents that due to the teeth being small a slight space may reappear after the closure treatment has been discontinued. In most of these cases fortunately the reopened space between the centrals is much smaller than before the frenectomy.

We have all seen deep overbites in adults and are acquainted with the difficulties attending such conditions. We have also seen deep overbites in children. Many of these appear to decrease after the eruption of the second molars unless

we also find present a malocclusion such as disto-occlusion. How do we prevent deep overbites? I don't know. Heredity perhaps can be blamed for many of them. Perhaps premature loss of deciduous teeth, abnormal occlusion of deciduous cuspids and a lack of consumption of coarse foods might be contributing factors. It may be more than a coincidence that many children with deep overbites show an aversion to hard or coarse foods. Perhaps the deep overbite has contributed to the child's dislike of coarse foods by interfering with his chewing efficiency. At any rate we should always free the bite in the deciduous cuspid regions and encourage the child patient to eat plenty of hard, coarse foods. If the deep overbite is the only malocclusion and no harm is being caused to the anterior gingival tissues the bite correction is often left until the second molars have erupted.

Open bites are with a few exceptions caused by either over-sized tongues or habits. We can in the latter case usually prevent the occurrence by obtaining and maintaining normal lip closure and proper tongue positioning at an early age. In order to correct an open bite we must gain patient co-operation in faithfully doing exercises to strengthen and close the lips and reposition the tongue. Many of these children show a speech defect, referred to as an interdental sigmatism. In such cases the child speaks with the tongue thrust between the anterior teeth. Words with the sound "th" are among those most often misarticulated. Usually some appliance is necessary to prevent the tongue going between the teeth and to discourage any other contributing habits that may be present.

Since prevention of malocclusion often involves active appliance treatment, the question arises when do you stop preventing and start treating? This of course will depend on the individual case and also the individual operator. As a general rule we should treat in the deciduous dentition any malocclusion that interferes with the normal growth and development of the

dental arches. Usually this means unilateral or bilateral cross-bites, prematurely lost teeth etc. The majority of appliance therapies are started in the mixed dentition period. Such conditions as minor rotations, some extraction cases, and deep overbites where molar and bicuspid occlusion is normal are frequently left until the second molars are erupting. This of course is all very general and may vary with the individual case and the individual operator. The decision as to when to treat should be decided by the operator who proposes to do the treatment.

This brings up another question as to when to refer a patient for a consultation. The obvious answer is when you find something in the occlusion which you feel is beyond the range of normal and on which you would like another's opinion. Personally I prefer to see children having malocclusions at an early age. This allows a period for preventive measures which may eliminate the necessity later for more extensive treatment.

I was told when given this honour of addressing you, to stick to prevention and

keep away from appliances. I have endeavoured to do this in so far as possible. In closing I would like to refer to a few statistics. Massler and Frankel in 1951 found in a Dental survey that 80% of the examined children had malocclusions. In the *International Dental Journal*, December 1953, Nord states that, after reviewing surveys all over the world, it is known that at least 50% of all children have malocclusions and that certainly 50% of these are in need of definite treatment. If this is so, and survey figures seem to substantiate it, then it must be perfectly obvious that all the malocclusions present and developing cannot be taken care of by the Orthodontists. The responsibility falls back on our profession as a whole. In order to meet this challenge we must keep prevention uppermost in our minds, remembering always that a good occlusion is an aid toward the prevention of caries, and periodontal conditions. Prevention in youth pays off in added, more efficient service in the adult dentition. This prevention is yours and mine to bestow.

An evaluation of dental caries control by fluorides

by R. J. MILLER, B.A., D.D.S., Victoria, B.C.

(A) INTRODUCTION

In recent years much interest has centred around the question of whether fluoridation of communal water supplies would be beneficial to dental health. Under the forceful influence of many great researchers, most dentists today are convinced that the addition of fluorine

ion to the drinking water of a community will cause an appreciable reduction in dental caries. The objective of this paper is to present two communities, one with naturally occurring fluoride salt in the communal water supply, and the other with a fluoride-free water supply, and to compare the dental caries rate manifest in each. By this comparison it is hoped that definite proof of the anti-cariogenic property of the fluorine ion can be shown.

The only community in British Columbia that at present contains fluoride salt in the drinking water is Nakusp which has the fluorine ion occurring naturally in the water. The choice of a non-fluoride community was very wide indeed, and a community on Vancouver Island, Parksville, was chosen at random. Surveys of the dental health of the children between the ages 6 and 14 were made in each community, the Nakusp survey taking place in October 1953 and the Parksville survey in May 1954.

(B) LOCATION

Nakusp is an unincorporated community, population approximately 800, situated on the east shore of the Upper Arrow Lake in the West Kootenays. By road, it is 99 miles north-west of Nelson.

Parksville is also an unincorporated community, population approximately 850, located on the east shore of Vancouver Island, 23 miles north of Nanaimo.

(C) WATER SUPPLY

Nakusp is supplied with water from a reservoir located at the east end of the community. Seven-mile Creek flows directly into the reservoir. Brouse Creek is joined to Seven-mile Creek by a flume located three or four miles from the reservoir and the combined flow of water constitutes Nakusp's command water supply.

The water supply for Parksville is obtained from a reservoir which is supplied by three wells. The reservoir is located at the south-west end of town, and the water is piped from there to the various householders.

(D) FLUORINE CONTENT

A sample of water taken from the Nakusp reservoir by the Medical Health Officer and subsequently analyzed showed a fluorine content of 0.7 parts per million of water. It was not considered

necessary to analyze the two separate sources of water supply as the combined effect is manifest in the sample taken from the reservoir.

An analysis of a water sample taken from the Parksville reservoir showed no fluorine content whatsoever.

(E) SELECTION OF THE SAMPLE

The elementary school in Nakusp has a total enrollment of 216 children, from Grade 1 to Grade 6. On October 15, 1953 slips were given to each child and they were instructed by their teacher to have them filled out at home and returned to her by October 16th. All ineligible children were separated from those eligible, and their slips destroyed. A total of 108 children were found to meet the requirements for eligibility in the survey.

A similar procedure was adopted at Parksville and the slips were returned May 23, 1954. From the total number returned, 94 children were found to be eligible for the survey.

(F) NON-RESPONSE

One child in Nakusp, because of illness, could not present herself for examination, leaving a total of 107 children for the survey. Two children in Parksville could not present themselves for examination because of illness.

(G) EXAMINATIONS AND RECORDS

Examination of the children's dental health was done on October 20th and 21st, 1953, in Nakusp, and on May 25th and 26th, 1954, in Parksville. Definitions of caries lesion, criterion of presence and indications for extraction as stated in *A Suggested Methodology for Fluoridation Surveys in Canada*, were strictly adhered to. Records were kept in the same manner as suggested in the brochure.

(H) RESULTS

The results are tabulated comparatively in the following tables:

NAKUSP

1. 6-8 yrs.—43 children

1—non-response

(a) DECIDUOUS TEETH

d	97
f	43
Tot. df	140
Caries free	404
Tot. present	544
e (e + er)	36

(b) DECIDUOUS SURFACES

d	181
f	71
Tot. df	252

(c) 6 YR. MOLARS

DMF Teeth	17
Caries free	132
Tot. erupted	149

(d) UPPER INCISORS

DMF Teeth	0
Caries free	73
Tot. erupted	73

(e) PERMANENT TEETH

D	7
M	0
F	11
Total DMF	18
Caries free	350
Tot. erupted	368
X (X + XR)	0
M + X	0

(f) PERMANENT SURFACES

D	8
M	0
F	16
Total DMF	24
DMF upper incisors	0
DMF 6 yr. molars	22

2. 9-11 yrs.—37 children

(a) DECIDUOUS TEETH

d	62
f	6
Total df	68
Caries free	111
Tot. present	179
e (e + er)	29

PARKSVILLE

1. 6-8 yrs.—24 children

1—non-response

(a) DECIDUOUS TEETH

d	112
f	48
Tot. df	160
Caries free	131
Tot. present	291
e (e + er)	31

(b) DECIDUOUS SURFACES

d	227
f	91
Tot. df	318

(c) 6 YR. MOLARS

DMF Teeth	47
Caries free	45
Tot. erupted	92

(d) UPPER INCISORS

DMF Teeth	0
Caries free	64
Tot. erupted	64

(e) PERMANENT TEETH

D	40
M	0
F	7
Total DMF	47
Caries free	200
Tot. erupted	247
X (X + XR)	1
M + X	1

(f) PERMANENT SURFACES

D	50
M	0
F	9
Total DMF	59
DMF upper incisors	0
DMF 6 yr. molars	59

2. 9-11 yrs.—34 children

(a) DECIDUOUS TEETH

d	71
f	17
Total df	88
Caries free	59
Tot. present	147
e (e + er)	30

(b) DECIDUOUS SURFACES

d	140
f	11
Total df	151

(c) 6 YR MOLARS

DMF Teeth ..	48
Caries free ..	100
Total erupted	148

(d) UPPER INCISORS

DMF Teeth ..	5
Caries free ..	142
Total erupted	147

(e) PERMANENT TEETH

D	26
M	8
F	20
Total DMF	54
Caries free ..	601
Total erupted	655
X (X + XR) ..	5
M + X	13

(f) PERMANENT SURFACES

D	39
M	24
F	24
Total DMF	87
DMF upper incisors ..	13
DMF 6 year molars ..	73

3. 12-14 yrs.—27 children

(a) DECIDUOUS TEETH

d	11
f	1
Total df	12
Caries free ..	14
Total present	26
e (e + er)	5

(b) DECIDUOUS SURFACES

d	25
f	1
Tot. df	26

(c) 6 YR. MOLARS

DMF Teeth ..	62
Caries free ..	50
Total erupted	112

(b) DECIDUOUS SURFACES

d	161
f	35
Total df	196

(c) 6 YR MOLARS

DMF Teeth ..	98
Caries free ..	38
Total erupted	136

(d) UPPER INCISORS

DMF Teeth ..	42
Caries free ..	93
Total erupted	135

(e) PERMANENT TEETH

D	64
M	9
F	72
Total DMF	145
Caries free ..	505
Total erupted	650
X (X + XR) ..	4
M + X	13

(f) PERMANENT SURFACES

D	95
M	27
F	122
Total DMF	244
DMF upper incisors ..	47
DMF 6 years molars ..	190

3. 12-14 yrs.—36 children

1 .. non-response

(a) DECIDUOUS TEETH

d	3
f	0
Total df	3
Caries free ..	2
Total present	5
e (e + er)	2

(b) DECIDUOUS SURFACES

d	8
f	0
Tot. df	8

(c) 6 YR. MOLARS

DMF Teeth ..	129
Caries free ..	15
Total erupted	144

(d) UPPER INCISORS

DMF Teeth .. 13
Caries free .. 97

Total erupted 110

(e) PERMANENT TEETH

D 26
M 9
F 56

Total DMF 91
Caries free .. 588

Tot. erupted 679
X (+ XR) 8
M + X 16

(f) PERMANENT SURFACES

D 51
M 27
F 62

Total DMF 140
DMF upper incisors .. 14
DMF 6 yr. molars .. 110

(d) UPPER INCISORS

DMF Teeth .. 75
Caries free .. 69

Total erupted 144

(e) PERMANENT TEETH

D 130
M 23
F 163

Total DMF 316
Caries free .. 641

Tot. erupted 957
X (X + R) 9
M + X 27

(f) PERMANENT SURFACES

D 225
M 69
F 266

Total DMF 560
DMF upper incisors .. 109
DMF 6 yr. molars .. 278

(I) COMPUTATION SUMMARY

NAKUSP

- (1) Mean df per 100 children
6- 8 yr. group, Ma 323
9-11 yr. group, Ma 183
12-14 yr. group, Ma 44

- (2) Mean DMF per 100 children
6- 8 yr. group, MA 42
9-11 yr. group, MA 146
12-14 yr. group, MA 338

- (3) df teeth per 100 teeth
6- 8 yr. group, Pdf 25.73
9-11 yr. group, Pdf 37.98
12-14 yr. group, Pdf 46.14

- (4) DMF teeth per 100 teeth
6- 8 yr. group, Pdmf .. 4.89
9-11 yr. group, Pdmf .. 8.24
12-14 yr. group, Pdmf .. 13.40

- (5) Caries-free teeth/100 teeth deciduous
6- 8 yr. group, cf 74.26
9-11 yr. group, cf 62.01
12-14 yr. group, cf 53.86

- (6) Caries-free teeth/100 teeth permanent
6- 8 yr. group, CF .. 95.10
9-11 yr. group, CF .. 91.75
12-14 yr. group, CF .. 86.59

PARKSVILLE

- (1) Mean df per 100 children
6- 8 yr. group, Ma 666
9-11 yr. group, Ma 259
12-14 yr. group, Ma 8

- (2) Mean DMF per 100 children
8- 8 yr. group, MA 191
9-11 yr. group, MA 426
12-14 yr. group, MA 877

- (3) df teeth per 100 teeth
6- 8 yr. group, Pdf 54.98
9-11 yr. group, Pdf 59.83
12-14 yr. group, Pdf 60.00

- (4) DMF teeth per 100 teeth
6- 8 yr. group, Pdmf .. 19.03
9-11 yr. group, Pdmf .. 22.30
12-14 yr. group, Pdmf .. 33.02

- (5) Caries-free teeth/100 teeth deciduous
6- 8 yr. group, cf 45.02
9-11 yr. group, cf 40.13
12-14 yr. group, cf 40.00

- (6) Caries-free teeth/100 teeth permanent
6- 8 yr. group, CF .. 80.97
9-11 yr. group, CF .. 77.69
12-14 yr. group, CF .. 66.87

(7) DMF 6 yr. Molars/100 teeth		
6- 8 yr. group, 6 Mdmf	11.40	
9-11 yr. group, 6 Mdmf	32.50	
12-14 yr. group, 6 Mdmf	55.35	

(8) DMF Upper incisors/100 teeth		
6- 8 yr. group, UI dmf	0	
9-11 yr. group, UI dmf	3.40	
12-14 yr. group, UI dmf	11.81	

(9) Mortality Index, permanent teeth only		
6- 8 yr. group, Mb ..	0	
9-11 yr. group, Mb ..	0.35	
12-14 yr. group, Mb ..	0.59	

(10) Percentage children caries-free		
6- 8 yr. group, Pc	13.94	
9-11 yr. group, Pc	8.10	
12-14 yr. group, Pc	7.40	

(7) DMF 6 yr. Molars/100 teeth		
6- 8 yr. group, 6 Mdmf	51.08	
9-11 yr. group, 6 Mdmf	72.07	
12-14 yr. group, 6 Mdmf	89.58	

(8) DMF Upper incisors/100 teeth		
6- 8 yr. group, UI dmf	0	
9-11 yr. group, UI dmf	31.11	
12-14 yr. group, UI dmf	52.08	

(9) Mortality Index, permanent teeth only		
6- 8 yr. group, Mb ..	.04	
9-11 yr. group, Mb ..	.38	
12-14 yr. group, Mb ..	.75	

(10) Percentage children caries-free		
6- 8 yr. group, Pc	4.16	
9-11 yr. group, Pc	0.00	
12-14 yr. group, Pc	0.00	

(J) CONCLUSIONS

It is established by the results of the computation survey that the caries-experience of the children in Nakusp whose water contains 0.7 parts of fluoride per million parts of water is markedly less than that experienced in a non-fluoride area, Parksville. Bearing in mind

that the recommended optimum amount of fluorine in drinking water is 1.0 to 1.2 parts of fluorine per million parts of water, it is concluded that the presence of fluoride salt in communal drinking water does appreciably decrease the cariogenic activity in both the deciduous and permanent dentitions.

The gavel

by DON W. GULLETT, D.D.S. SECRETARY C.D.A.

THE SIGNIFICANCE

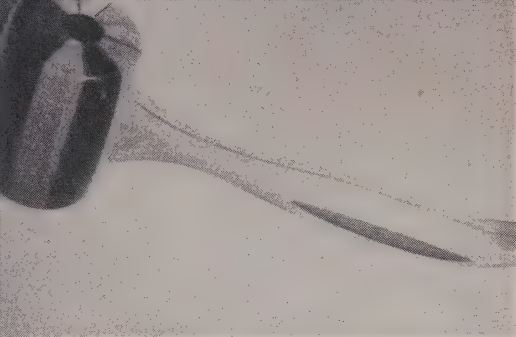
The origin of the word "gavel" is distinctly of this continent. The derivation of the word is thought to be from the German "gipfel" or gable. Originally gavels were shaped like the triangular upper part of a wall at the end of a ridged roof.

The gavel is recognized by various artists under different appellations, but it is recognized by all that no work of consequence can be completed without it. It is recognized as a working tool and its

symbolism is carried over in its use by presiding officers. The form of the gavel has varied through the ages. The original form used by the mason was flat on one end and pointed on the other. The form used today symbolically is more often shaped like the workman's maul than the original and was adopted for convenience.

The gavel is an emblem of power by means of which order is preserved. A curious figure of speech is to be found in Proverbs XXV, 18, "A man that beareth false witness against his neighbour is a maul, and a sword and a sharp arrow."

It has become an historical custom that upon transference of office from one to



Photo—Ronald Martin

another certain recognized emblems of office are passed from one to the other. No emblem is more frequently used in this symbolical way than the gavel. Traditionally and symbolically the conferment of this symbol endows the newly installed officer with a particular power of authority.

THE CONCEPT

The idea was evolved that the national body of Canadian dentistry should possess a gavel representative of the provinces. As a consequence each province was requested to furnish a piece of wood either of some historical significance or representative in some way of the particular province. In some measure the following describes the parts constituting the finished gavel beginning from the key, which locks the handle in place, and in order clockwise.

Newfoundland.—This piece of wood (oak) is from the old sealing ship "Terra Nova." She sailed for many years for the seal fishery under the flag of Bowring Bros., Newfoundland merchants. This ship sailed on the Antarctic Expedition with Captain Scott (1910) to the South Pole. Finally she was lost during the recent war off the coast of Greenland. The "Terra Nova" is mentioned in most encyclopaedia in connection with Scott's Antarctic expeditions.

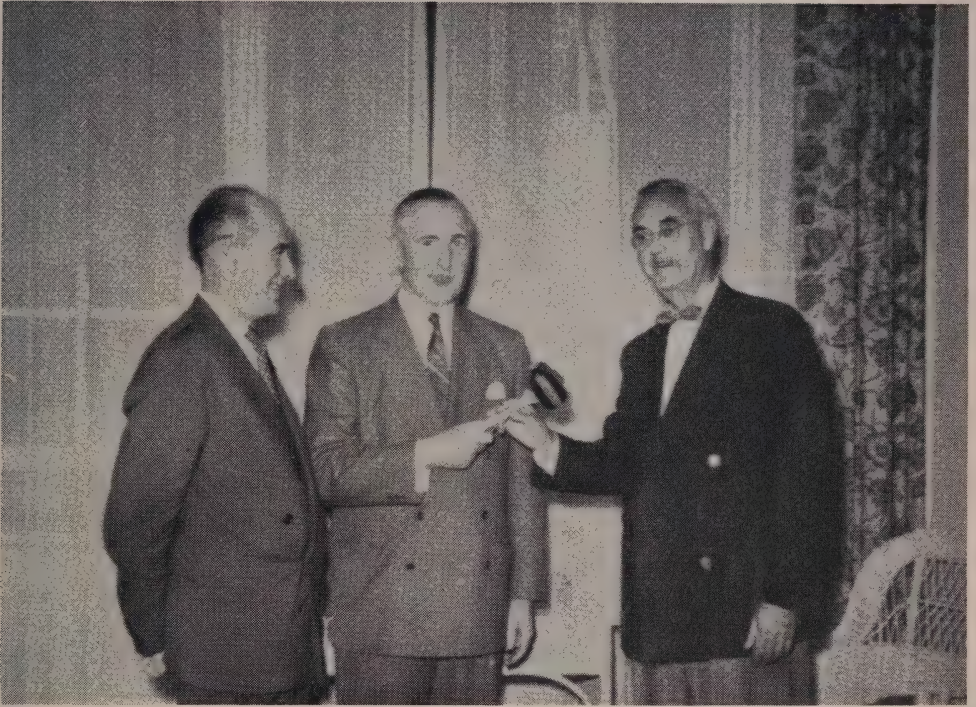
Nova Scotia.—The Murray Homestead on the Studley Grounds of Dalhousie University, Halifax, from which this piece of wood is derived, was demolished in July 1949, to make way for the New Arts and Administration Building of the University, which is now in use, and which was opened in December 1951. The

original "Studley" on this site was built by Judge Alexander Croke in 1802. Matthew Richardson purchased the place after Croke left Nova Scotia. Afterwards Croke's "Studley" burned in 1831, Richardson built another house on the site. This house was also known as Studley. Afterwards the ownership passed to Antionette Nordbeck, and from her to Rev. Robert Murray, and then became known as the Murray Homestead. It was this second "Studley" which was pulled down in 1949, being 118 years old.

Prince Edward Island.—Government House at Charlottetown was built about 1830 and this piece of wood is a part of the original wood used in the structure. It is white birch, being doubly significant in that this wood is the recognized wood representing the Province of Prince Edward Island.

New Brunswick.—The wood (oak) is from the Armed Merchantman Marquis de Malauze. This was one of a force of vessels sent out under Captain Giraudais from France in 1760 with supplies and reinforcements for the forces on the St. Lawrence. Learning that the St. Lawrence was controlled by the British fleet, three of the vessels sought shelter in the Restigouche River while awaiting instructions from Montreal. Here they were found by a British squadron from Louisbourg commanded by Captain Byron. There then ensued seventeen days of fighting, the end coming on July 9th nearly opposite the site of the present town of Campbellton. The other two vessels were set on fire by the French when their position became hopeless. The Marquis de Malauze contained sixty-seven prisoners and was abandoned. Once the prisoners were rescued, however, the British set her afire.

This Battle of the Restigouche was the last real clash between France and England for control of this continent and the only naval engagement of any account fought in New Brunswick waters. The hull of the Marquis de Malauze was raised in 1930 and can be seen in the



Presentation of Gavel to Dr. A. J. Coughlan (centre) by Dr. Harvey W. Reid (right). Dr. P. G. Anderson, who made the gavel, looks on.

Photo—Ronald Martin

grounds of the Capucin Monastery at Cross Point, P.Q.

Quebec.—The wood of the gavel is a part of a red oak beam which was removed, during alterations, from the Armoury Building, erected around 1837 inside the walls of the Citadel of Quebec.

The Citadel, overlooking the historic battlefield of the Plains of Abraham where the fight for Canada took place on the 13th of September 1759, crowns Cape Diamond and forms the left flank of the old walls of Quebec.

The construction of the ramparts, buildings etc. started in 1820 to be continued over thirty years.

The Citadel has retained relics of the French regime such as the Redoubt of Cape Diamond (1693) and the ancient powder magazine (1750) now transformed into a museum.

British troops garrisoned the Citadel until relieved by Canadian Units in 1871. The Royal 22nd Regt. has occupied it since 1920.

The main part of the same red oak beam from which this wood is taken, was worked by l'Ecole du Meuble in Montreal into a wonderful large table and donated by the Province of Quebec to the Officers of the Royal 22nd Regt. The table now ornates the mess of the officers in the Citadel.

Ontario.—This piece of wood has been secured from Fort York at Toronto. The original Fort York was built by Governor Simcoe at the mouth of a creek, afterwards known as Garrison Creek, which has disappeared long since. It was constructed when decision was made to establish the capital of Upper Canada at York (now Toronto) and probably the

first permanent building to be erected in the area. While being constructed Governor and Mrs. Simcoe lived across the creek in a canvas structure, there being no housing. During the war of 1812-14 the fort was practically destroyed through two attacks by the enemy. By 1816 it was rebuilt in a more solid character. The municipality became incorporated as a city in 1834 under the name of Toronto but the name of the fort remained as York. By this period York became too small to accommodate the growing militia and Stanley Barracks was built nearby. Through neglect the old fort was allowed to fall into a more or less ruinous condition. During the preparations for celebrating the Toronto Centennial (1934) a strong agitation sprang up for restoration of the fort. The result was that detailed restoration on the plan of 1816 was made and the opening celebrated fittingly on May 24, 1934.

Manitoba.—The wood representing this province originates from Fort Prince of Wales located at the mouth of the Churchill river, near Churchill, Manitoba, which was commenced in 1732 and finished in 1772. It was second only to Quebec in being the greatest stone fortification in America. The walls in places being thirty inches thick, not more than ten men at a time worked on it, and so it took forty years to complete. A French fleet under Comte de la Perouse took it in 1782 and destroyed it. It was held by Governor Samuel Hearne, he had forty-two cannons and a garrison of thirty-nine men. It has been a mystery why it was surrendered without a shot being fired. It was the centre from which most of northern and much of Western Canada was explored in the early days. There is some hope it may be rebuilt at least in part, as it was of great historic importance in the early days of the West.

Saskatchewan.—During the search for suitable pieces of wood representing each province it became known that a certain kind of wood officially represents each province. The wood denoting Saskat-

chewan is poplar and the piece submitted comes from the northern part of that province.

Alberta.—Lodge-pole pine is the official wood for Alberta and the section representing this province is of this kind of wood.

British Columbia.—The section representing British Columbia is a piece of wood (oak) from the S.S. Beaver. The sidewheeler Beaver was the first steamer in the North Pacific. Built in London in 1835 for the Hudson's Bay Company, she crossed to the Pacific Coast via Cape Horn, under sail, and at Fort Vancouver on the Columbia River her engines were installed. Until 1874 she plied the coastal waters of what is now the state of Washington and the Province of British Columbia, trading with the Indians and carrying officers of the Company on important missions.

In 1858, she took Governor Sir James Douglas and Chief Justice Sir Matthew Begbie to Fort Langley near the mouth of the Fraser, where the creation of the Province of British Columbia was proclaimed. In 1874 she was sold and became a tow boat for a lumber firm; fourteen years later she was wrecked on Prospect Point at the mouth of Vancouver Harbour—in 1892 she broke up.

There remains for description the parts of the gavel, other than the head.

THE HANDLE

After due consideration it was deemed suitable that the handle should possess some national significance. In view of the relationship between the provincial dental bodies and the Canadian Dental Association the wood for the handle was secured from C.D.A. Headquarters when alterations were made at the time of purchase. Maple is Canada's national wood. This wood is heart maple and symbolically represents the centre or heart of things related to Canadian dentistry.

THE KEY

Symbolically the key is meant to represent the holding together of all parts of the gavel. It is made from a piece of elk's horn, an animal which has considerable national significance in Canada.

THE EBONY SPOTS

On the ends of the head will be observed circular pieces of ebony. These were cut from the end of an old black ebony bookkeepers' ruler, being at least 125 years old and an heir-loom now owned by the present C.D.A. Secretary, having been passed down through his family. These rulers, as used of old by bookkeepers sometimes appear symbolically as emblems of administration.

THE MAKING

The significance of the gavel is greatly enhanced for the profession in that it has been made by a dentist. The maker is Dr. P. G. Anderson, who has laboured sincerely and conscientiously on the task during his term as President-elect of the Association.

THE PRESENTATION

The presentation of the gavel was made to President A. J. Coughlan by Dr. Harvey W. Reid, Past-president, Canadian Dental Association, at the opening session of the Board of Governors at St. Andrews-by-the-Sea, September 1st, 1954.

Review of Impression Materials

by R. W. PHILLIPS, B.S., F.I.C.D.

International Dental Journal, September 1954.

Reversible and irreversible hydrocolloids are becoming increasingly popular as impression materials for prosthetic dentistry. They are unexcelled for accuracy and their ease of manipulation and relative elasticity is a distinct advantage.

Review of the literature indicates that little research has been done in the past few years on compound and wax. The significant work on plaster has been primarily devoted to an evaluation of the mechanical devices used in preparing the mix. Use of vacuum equipment or motor-driven mechanical spatulation does reduce the air voids and minimizes the human variables.

As with all dental materials, the elastic materials are subject to many human variables. Inaccuracy can usually be traced to improper manipulation, removing the impression too soon and improperly, and storage before pouring. The impression is very susceptible to dimensional change due to loss or gain of water and release of the internal strain. Although the impression should be poured immediately, storage in 100 per cent humidity

is the safest environment. Reversible hydrocolloid still remains somewhat superior to irreversible hydrocolloid, particularly in regard to sharpness of detail and model surface hardness. However, the alginates have improved greatly in recent years and are approaching the accuracy of reversible hydrocolloid.

To assure a hard dense surface on the working model, the stone or plaster should be carefully poured. Mild vibration must be used and the stone added in small increments. The model should not be separated before one hour.

Recent research has added to our knowledge of the setting reactions of zinc oxide-eugenol pastes. An evaluation of existing products indicates a wide difference in properties. A material should be selected which has a narrow time interval between the initial and final set. The paste should have adequate flow and should accurately reproduce all surface detail. A new group of plastic materials has recently been introduced in the United States, primarily advocated for indirect inlay techniques but also suggested for full dentures. No information is as yet available on their merit but they deserve, as a class of materials, further study.

ABSTRACTS

Biologic Basis for Correcting Occlusal Disharmonies.

by BALINT ORBAN, M.D., D.D.S., Chicago, Ill.

The Journal of Periodontology, October 1954.

A patient does not have to have periodontal disease, loose teeth, or a cracking or sore temporomandibular joint to be eligible for occlusal adjustment. A harmonious relation between teeth, temporomandibular joint and masticatory muscles is the basic objective of a biologic, functional approach to dentistry. If periodontal disease is present, establishment of a harmony is more than a theoretically sound biologic objective. It is an absolute basic clinical or practical requirement. Working on this premise, one may state the following:

1. The supporting tissues of the teeth are structured according to functional requirements; the better the functional relation between the mandibular and maxillary teeth in every position, the less the strain on the supporting tissues. This assures a most favorable tissue response to changes in functional demands.

2. A harmonious relation between the teeth, temporomandibular joint and muscles of mastication is a prerequisite to a physiologic function.

3. Under conditions of health in structure and function, there is great adaptability in our tissues to changing functional demands. This adaptability can be endangered by either extrinsic or intrinsic factors and it is our duty to eliminate

these factors and thus to give adaptability its full chance.

4. Periodontal diseases (gingivitis, periodontitis, periodontosis, atrophy, hyperplasia) are disturbances of the structure and function of the supporting tissues of the teeth. Occlusal disharmonies under such conditions constitute a serious aggravating factor.

In addition to these "biologic principles" to be recognized in the problem of occlusion, there are the following objectives to keep in mind:

1. Equilibrate occlusion and articulation of the teeth to harmonize with musculature and temporomandibular joint.

2. Bring occlusal forces into direction of long axes of teeth bringing lingual cusps of maxillary teeth into central grooves of mandibular teeth and buccal cusps of mandibular teeth into central fossae of maxillary teeth.

3. Distribute forces in functional positions to largest possible number of teeth. Be sure to eliminate premature contacts on non-functioning side. In a natural dentition, a balancing contact is not a functional requirement.

4. Establish static relation between cusps and opposing fossae.

5. Reduce steepness of cusp inclines—establish similar inclines on all teeth.

6. Reduce size of contact surfaces.

7. Retain sharpness of cusps and establish smooth guiding planes.

8. Do not interfere with rest position of the mandible. Do not increase it by grinding and do not reduce it in reconstruction.

Two year clinical study of caries control with high-urea ammoniated dentifrice.

by ABRAM COHEN, D.D.S. and ALBERT DONZANTI D.D.S., Philadelphia.

Journal of the American Dental Association, August 1954.

Fosdick has shown that good oral hygiene will reduce caries experience. Therefore, if a therapeutic agent could be incorporated into the dentifrice to provide even greater protection, the dentifrice would be a valuable adjunct in caries prophylaxis.

Urea has been shown to be a bacteria inhibitor as well as a protein denaturant and solubilizer, which might reduce the size and number of dental plaques. As well, both urea and diammonium phosphate are potential liberators of ammonia, which would serve to neutralize any acid produced from carbohydrate.

A dentifrice paste containing 13 per cent urea and 3 per cent diammonium phosphate was selected, since it appeared that if the previous assumptions were correct, then the higher concentrations would be more desirable. Several previous studies on low-urea ammoniated dentifrice found only a difference of questionable significance between the control and test groups.

Three grade schools in Philadelphia were selected for the study so that different racial and economic levels would be represented in both the experimental and

the control groups. Special industrial washstands were installed so that large groups could brush their teeth simultaneously under supervision at 9 a.m. and 1.30 p.m. Plastic containers holding a brush and tube of dentifrice were kept in nearby cabinets, and the name of the pupil was printed on adhesive tape on the container assigned to him. In addition to the brush and dentifrice used in school, each pupil was given a brush and a tube of dentifrice for home use and an adequate supply of brushes and dentifrice for the summer vacation period. An attempt was made to have approximately the same proportion of test and control children in each school room. In the original group there were 449 pupils. The average age at the start of the experiment was approximately 11 years; 211 boys and 238 girls participated.

At the completion of the study there were 306 pupils, 169 in the test group and 137 in this control group.

The dentifrices used in this study were of the same colour, texture, flavour and abrasive and detergent nature. The only difference between the two dentifrices was that the control dentifrice was a plain cleansing paste and the test dentifrice contained 13 per cent urea and 3 per cent diammonium phosphate.

The following table indicates the decrease in the incidence of caries in permanent teeth, originally noncarious or unerupted at the start of the study.

Time interval	Group	No. children	No. teeth becoming carious	Mean	% reduction in incidence of caries	Significance ratio	Children without new caries		
							No.	%	% increase
After one year	Experimental	166	130	0.78	22.9	1.63			
	Control	131	132	1.01					
After two years	Experimental	169	287	1.70	25.2	2.57	55	32.5	25.8
	Control	137	311	2.27			33	24.1	

Comparison of means reveals that the difference at the end of one year between the average numbers of new carious teeth for the two groups, 1.01 and 0.78, is not statistically significant; but the difference between the averages at the end of two years is significant. The probability is computed as 0.01, signifying that there was one chance in one hundred that the differences could have occurred by chance.

Comparisons in this study were made in terms of permanent teeth only, and the analyses were performed in terms of averages so that the variations within each group could be appropriately assessed. This method is preferred to the "pooling" method, in which the overall attack rate is compared for each group. Thus, according to the pooling method, in the experimental group 287 teeth became carious out of 3,020 originally non-carious teeth, while in the control group 311 teeth became carious out of 2,529 originally non-carious teeth. The standard

significance test of differences between proportions gives an inflated significance ratio of 3.3, as compared to a significance value of 2.57, calculated on the basis of individuals.

The experiment was a fairly critical evaluation of reduction in caries incidence through the supervised use of a high-urea ammoniated dentifrice. The results indicate that the supervised use of the high-urea ammoniated dentifrice will reduce the number of permanent teeth with new carious lesions in children of school age by 25% after two years, as compared with the number after the supervised use of an ordinary cleansing dentifrice. The results indicate also that about 26% more children will have no permanent teeth with new carious lesions after two years on a supervised programme with a high-urea ammoniated dentifrice as compared with the number of children with such teeth after the supervised use of a non-ammoniated dentifrice.

An improved antibiotic-antihistamine compound for root canal medication (D.C.P.)

by GEORGE G. STEWART, A.B., D.D.S.
Journal of Dental Medicine, October 1954.

Combinations of antibiotics have been found to be effective in controlling the microbial life in the canal because of the variety of organisms that can be found there.

Because of sensitivity, an antibiotic-antihistamine compound for root canal medication has been introduced. The antihistamines protect the patient against allergic reactions and some have excellent antimicrobial activity as well.

PREPARATION OF THE D.C.P. CREAM.
Formula:
Dibenzylethylenediamine-Penicillin
(Bicillin) 300,000 units

Chloromycetin (crystalline) 125 milligrams
Perazil (antihistamine) 100 milligrams
Propylene glycol 0.25 c.c.
Xylocaine Ointment 5% 0.25 c.c.

Preparation:

Place 4 Perazil tablets (50 mg. each) in a sterile mortar, as used for mixing amalgam, and triturate to a fine powder. Add to this, the contents of a 250 mg. capsule of Chloromycetin and triturate further. The Bicillin is available in 1 c.c. disposable carpules with needle attached. Each c.c. contains 600,000 Units of Dibenzylethylenediamine-Penicillin. The Penicillin is added and a paste-like mass is produced by mixing it with the Perazil and Chloromycetin. To bring the mass to a cream consistency, 0.5 c.c. of 5% Xylocaine Ointment is added and 0.5 c.c. of Propylene glycol (approx. 7 drops) is added. The mixing is continued until a smooth creamy consistency is obtained.

If a thicker cream is desired, the Propylene glycol can be eliminated and 0.5 c.c. of 5% Xylocaine Ointment can be used for each 1.0 c.c. of total cream preparation.

The cream is stored in a 5 c.c. Luer-Lock syringe or in empty anesthetic capsules.

The clinical study of the first 100 teeth treated using D.C.P. cream as the root canal medicament is presented here.

The method of treatment is essentially that described by Grossman. The only difference is more frequent irrigation. A 3 per cent hydrogen peroxide solution was reacted with a double strength sodium hypochlorite solution after each instrument was used in the canal. These solutions were used primarily to flush the canal of loosened debris. If the canal is not flushed, these particles may be forced to the apex where they can block the apical foramen or be forced through the foramen where they can initiate additional periapical irritation.

After adequate cleansing and enlargement of the canal, it was dried with sterile absorbent points and the D.C.P. cream was introduced. A Luer-Lock syringe with a blunt angulated needle was used to introduce the cream. The canal was filled to overflowing, after which a thin absorbent point was introduced to the apex several times to insure thorough filling of the canal. The point was

then discarded and a small pledget of sterile cotton was placed in the pulp chamber. Gutta-percha was then used as a plunger to gently compress the cream to the apex. Pressure was discontinued when the patient became aware of a feeling of "fullness" in the tooth. If the pressure caused discomfort, the cotton and gutta-percha were removed. They were replaced with another pledget of dry sterile cotton and gutta-percha. This procedure generally brought comfort to the patient. A second seal of cement was then placed over the gutta-percha, for greater protection against leakage.

When the patient returned, the tooth was again isolated by means of a rubber dam and the entire area swabbed with untinted tincture of Metaphen 1:200, followed with 70 per cent alcohol.

After removing the double seal, the canal walls were dried with several sterile absorbent points. The test point was then inserted to the apex and permitted to remain there for one minute. It was then removed, placed in a tube of brain-heart infusion broth (Difco), and incubated at 37°C. for one week.

At the next visit, if the culture tube was free of growth and the tooth clinically comfortable, the root canal was filled. Prior to filling, however, the canal walls were again freshened and irrigated.

A statistical evaluation of the teeth treated is shown in the table.

An Analysis of 100 Teeth Treated with D.C.P.

Male	Female	Age Distribution of Patients						
		0-9	10-19	20-29	30-39	40-49	50-59	60 over
47	53	0	11	16	19	22	20	12

Anterior	Premolar	Molar	Periapical Area		Cultures Required	
			Yes	No	One	Two
48	26	26	83	17	94	6

RESEARCH

FOREFRONT OF CANADIAN DENTISTRY

Studies in the regeneration and reattachment of the supporting structures of the teeth

by W. J. LINGHORNE, D.D.S., Banting and Best
Department of Medical Research

NOTE:

Dr. Linghorne has been engaged in a study of the problem of regeneration of supporting structures lost through periodontal diseases. This general problem is being reported in five studies and will be published in abstract form, as each study is completed. Study number 1 appeared last month, but this present work is meant to serve as a general introduction to all five studies. It is therefore not to be considered a formal research presentation, because the original material will be published elsewhere.—Ed.

The possibility of eliminating or reducing the depth of a periodontal pocket by reattachment of the soft tissue wall to the denuded root has fascinated periodontists ever since Younger suggested the idea more than 50 years ago. If the reattachment hurdle could be surmounted the way might be opened for the restoration of the socket bone. This problem was a live issue in dentistry in the period following World War I. However, the lack of clinical success, plus the published opinion of leading histopathologists that the possibility of reattachment is remote has suppressed the interest in this field in recent years. Thus, in dental therapeutics we

still are plagued by the complications created by the loss of supporting structures.

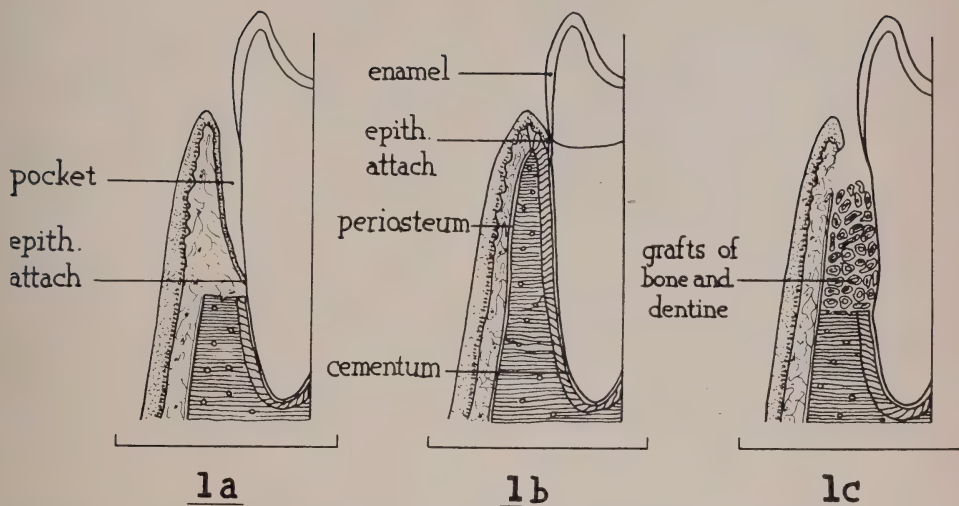
An investigation of the problem of regeneration of supporting structures lost through periodontal disease, has been carried on for the past five years in the Banting and Best Department of Medical Research*. Progress reports have been published in the Journal of Dental Research as a series "Studies in the Reattachment and Regeneration of the Supporting Structures of the Teeth". Studies 1 and 2 have been published, Study 3 is in the press, Studies 4 and 5 are in preparation. These reports are directed to other research workers and contain much detail of little interest to the busy clinician.

The present paper is a condensation of these studies. Our purpose is briefly to discuss this problem, outline the plan of the investigation and report the progress**. For a review of this field the reader is referred to publications by Waerhaug¹², Orban⁸, Skillen and Lundquist¹⁰. Reports of previous investigations with animals are also included in the bibliography^{1,2,3,4,9}.

* This investigation was assisted by a grant from the Associate Committee on Dental Research of the National Research Council to Dr. C. H. Best.

** Fuller details will be made available by the publication of abstracts of the series in the Journal of the Canadian Dental Association. This paper and the abstracts are in line with the policy of the research committee of the C.D.A., to keep the members informed about the dental research being carried on in Canada.

SKETCH 1



SKETCH 1A—Illustrates a periodontal pocket formed by detachment of the soft tissues and resorption of the socket bone.

SKETCH 1B—Represents the desired regeneration.

SKETCH 1C—Illustrates the grafts in place before suturing the flap.

STATEMENT OF PROBLEM

Sketch 1A illustrates a periodontal pocket. We see that denuded root is now part of the clinical crown and lies in the environment of the mouth (actually outside the body). Former investigators realized that before any reattachment could take place, the denuded root must be brought from the environment of the mouth into the internal environment. As the division between the internal and external environments is the epithelial attachment and the epithelium lining the pocket, it was deemed essential that this epithelium be completely removed. It was postulated that following the removal of the epithelium a blood clot formed in the pocket to permit the connective tissue cells to grow into the area, as in the healing of soft tissue wounds. It was hoped that in some unknown manner some type of reattachment to the denuded

root would take place. Unfortunately worthwhile amounts of reattachment have seldom if ever resulted from these procedures. Many reasons have been advanced to explain the failure, such as incomplete removal of the epithelium, the necrotic condition of the cementum on the denuded root, inadequate scaling, breakdown of the clot, trauma and infection. Another reason advanced by histopathologists and widely accepted is that the oral epithelium proliferates and covers detached gingiva too fast to permit attachment of connective tissues to the tooth.

PRESENT STUDIES

We have known for years that regeneration of structure occurs following damage to the periodontium in areas not involving the gingival crevice. Where the gingival crevice is involved as it is in

periodontal disease, we have had little success. Some of the reasons advanced for this failure are listed in the preceding paragraph. The key to the problem then appears to lie with the gingival crevice. Our basic plan was to ascertain if regeneration of lost structure could ever be induced in this area. If we were successful, we planned to study the mechanism and factors involved in the rebuilding process and then to apply what we have learned to try to achieve recovery from the damage occurring through periodontal disease (sketch 1a).

To eliminate as many complications as possible only animals with healthy gingival tissues were used. Experimental pockets approximately 10 mm in depth by 7 mm in width were prepared by surgical means in dogs. A gingival flap was made and a section of bone and periodontal membrane removed exposing the root. The root was scaled and the flap was sutured into place. This method of preparing experimental pockets has several advantages but we wish to mention

only one feature—the absence of epithelium lining the soft tissue wall of the pocket. If it becomes a race between the oral epithelium proliferating and covering the detached gingiva and the much slower process of connective tissue attachment, there would be little reattachment. In a few cases the epithelium did again cover the detached gingiva and there was no reattachment. But in the large majority reattachment occurred over approximately three quarters of the denuded root (Fig 1.) Histological examination revealed that the connective tissue fibres had been attached to the denuded root by a deposition of new cementum (Fig. 1.) We concluded from this work that the epithelium covered the detached gingiva only if the attachment process failed. In other words, the downgrowth of the epithelium over the detached gingiva was the result, not the cause of the failure of reattachment.

The results so far were encouraging. We knew that reattachment, an important phase of regeneration, can take place

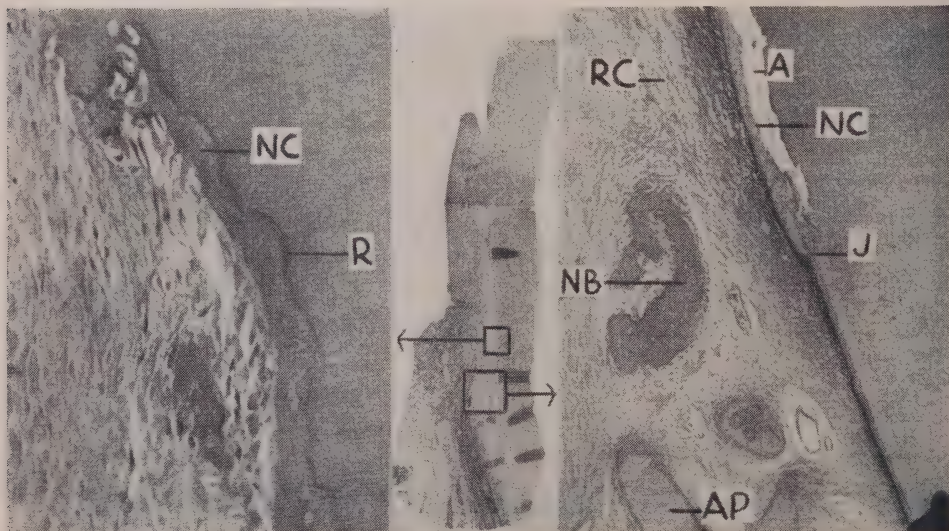


FIGURE 1—Shows approximately 8 mm of reattachment at 49th day of healing. A = artefact; AP = alveolar process; J = junction of old and new attachment; NB = new bone; NC = new cementum; R = resorption of old cementum and some of dentine; RC = replacement cells.

even if the gingival crevice is involved. We wish to emphasize that the experimental conditions were much more favourable than is the case where structure is lost through periodontal disease. Our attention was then directed away from the behaviour of the epithelium to a study of the attachment process.

The experimental procedures described were repeated in a sufficient number of animals to study the attachment process at intervals throughout its course. This work was published as Study 1 in this series⁶.

Under the conditions outlined, while there was considerable reattachment, there was only a little regeneration of bone (Fig. 1). Many reasons could be advanced for the comparative failure of bone growth, but it was noted that the required differentiation of osteoblasts and cementoblasts occurred only where the replacement cells came into contact with or were close to calcified tissue *i.e.* tooth structure or bone. To test whether the presence of these calcified tissues aided in the differentiation of osteoblasts and cementoblasts, the same stimulus for the remaining replacement cells was provided by filling the space created by the removal of the section of bone and periodontal membrane with autogenous grafts (small chips) of bone and tooth structure. Thus as the replacement cells grew into the blood clot many more would come into contact with calcified tissues (Sketch 1C). Under these experimental conditions, in addition to reattachment, there was a considerable regeneration of bone (Fig. 2). Again the regeneration process was studied throughout its course by repeating the procedures in many animals. This work was published as Study 2⁷.

Sufficient data were now available to justify a working hypothesis concerning the nature of the regenerative process. Briefly, replacement cells grew into the blood clot. The calcified tissue exposed to these cells, grafts, tooth and the cut edge of the alveolar process was resorbed until the 16th day, at which time the

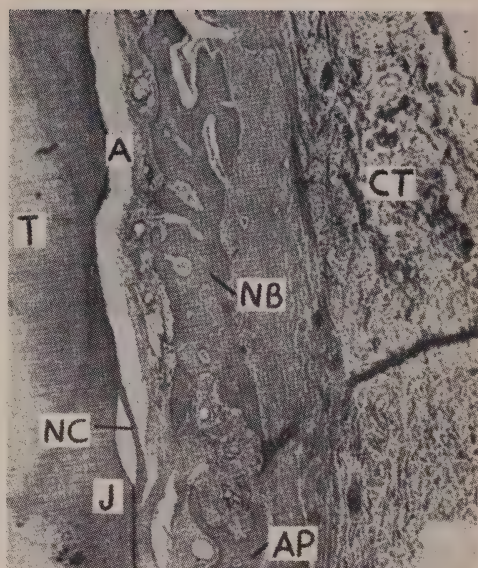


FIGURE 2—Specimen at 55 days showing reattachment and regeneration of alveolar bone. A = artefact; AP = alveolar process; CT = connective tissue of detached gingiva; J = junction of old and new attachment; NB = new bone; NC = new cementum; T = teeth.

osteoclasts disappeared and osteoblasts and cementoblasts appeared lining the previously resorbed calcified surfaces. Apposition of bone and cementum on these surfaces began. While this was going on, coarse trabeculae of new bone appeared to be growing from the cut alveolar process. These new trabeculae were observed as early as the 8th day and continued to grow among the grafts but not in contact with them (Fig. 3). Around the 40th day the two osteogenic processes, growth of trabeculae and apposition on the previously resorbed calcified surfaces, united to form bone. Macroscopically this new bone felt quite soft and could be easily pierced by a probe. However, remodelling procedures soon resulted in mature lamellar bone.

The resorption of the denuded root and apposition of new cementum coincided

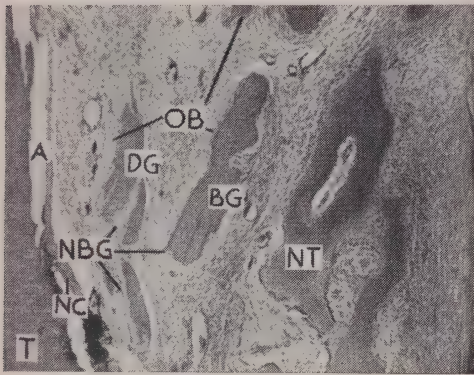


FIGURE 3—Specimen at 30 days showing apposition on denuded root, on grafts of tooth structure and bone, also trabeculae of new bone. Note the new trabeculae do not contact grafts at this stage. A = artefact; BG = bone grafts; DG = dentine grafts; NBG = new bone laid on grafts; NC = new cementum; NT = new trabeculae; OB = osteoblasts; T = tooth.

with the resorption and apposition of bone on the grafts. It appeared that the new bone deposited on the grafts and the new cementum on the denuded root were the same type of tissue. We concluded that in the regenerative process the difference between the osteoblasts and cementoblasts was one of position only. The differences in structure between bone and cementum are probably due to the avascular nature of the latter and lack of remodelling. Reattachment was observed microscopically as early as the 16th day. It could be definitely determined in the living animal by the 25th day of healing.

Before attempting to induce regeneration in the more complex conditions presented by infected epithelialized pockets it seemed essential to ascertain the origin of the cells required for the regeneration process. Could these cells come from the detached gingiva, or must they come from the bone and periodontal membrane at the margin of the pocket? A study was planned to throw light on this important question. This study will be reported in

detail in the near future but it may be sufficient to say that our findings suggest that cells proliferating from the bony margins of the pocket, if not essential for regeneration, are to be preferred to cells originating in the gingiva.

The work so far has been a basic study under experimental conditions of the regenerative process involved in reattachment of the soft tissue and rebuilding of the bone of the socket. Could regeneration be induced from epithelialized pockets? Could a method be found that would be suitable for clinical use? In this regard, it has been accepted that the complete removal of the epithelial attachment and pocket epithelium was essential for reattachment. This procedure is considered too difficult to be practical. Fortunately reattachment of the soft tissue wall and regeneration of the socket bone similar to that described in

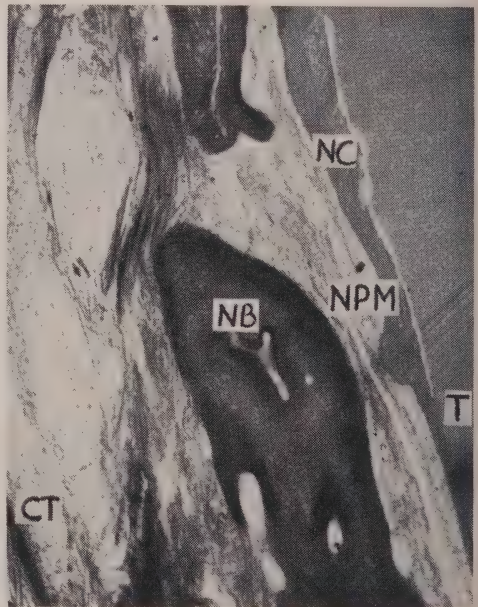


FIGURE 4—Specimen at 106 days showing regeneration of supporting structures from epithelialized infected pockets. CT = connective tissue of detached gingiva; NB = new bone; NC = new cementum; NPM = new periodontal membrane; T = tooth.

Study 2, has been induced from epithelialized pockets without removing the epithelium (Fig. 4). This study when completed will be reported in the series and abstracted for the J.C.D.A.

Another approach to our problem was investigated. The writer had occasionally observed apparent regeneration of supporting structure in patients where no attempt had been made at securing reattachment. This apparent regeneration was observed a year or more after periodontal treatment. Other men have reported similar observations. To investigate these observations, infected epithelialized periodontal pockets were prepared in dogs and treated by the conservative periodontal clinical procedure. As the pockets were prepared in animals with normal gingivae there were no predisposing factors. Nothing further was done for approximately 15 months. At the end of that period varying amounts of reattachment and regeneration of alveolar process were observed in almost all the cases. In the case shown in Fig. 5 there was complete reattachment and regeneration of the bone. An hypothesis to explain the manner in which this regeneration took place was advanced and is now in press.

DISCUSSION

It appears that regeneration of lost supporting structure may be induced in dogs by two methods *i.e.* by organization of a blood clot comparable to the healing of a fracture and a much slower method probably dependent to some extent, at least, on an inherent growth potential of these tissues. For the present we might term these the surgical and conservative approaches to regeneration. Preliminary investigations suggest that basically the same regenerative processes occur in human subjects. Assuming this to be true, what does this mean for periodontics? It appears that the potential for regeneration of lost supporting structure exists. We have some knowledge of the mechanism of the regenerative process. But in

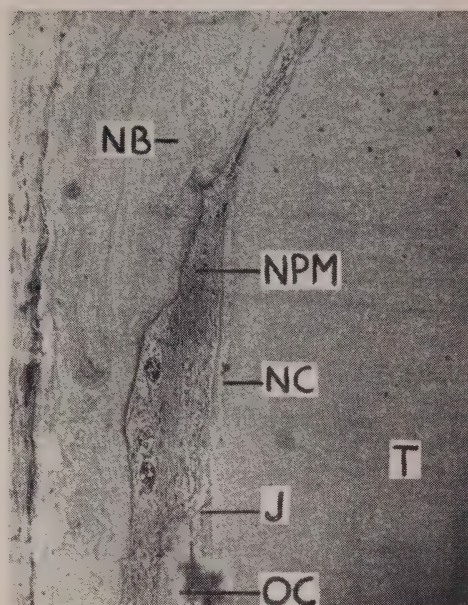


FIGURE 5—Specimen at 22 months, showing junction of old and new attachment. Note the new bone has followed the new outline of the resorbed root. J = junction of old and new attachments; NB = new bone; NC = new cementum; NPM = new periodontal membrane; OC = old cementum; T = tooth.

this investigation only animals with healthy gingival tissues were used, so except for the surgical interference the environment of the periodontal tissues was considered "physiological". In contrast, our patients have developed periodontal disease. The environment is probably not "physiological". One would not expect regeneration of structure where "break-down" factors are still operating. Again, the use of autogenous bone grafts in the surgical approach is not practical. Some other method for aiding the regeneration of bone must be found.

Our objective should now be not only to arrest the breakdown process but to reverse it. The problem is to develop methods which will bring about worthwhile regeneration in, at least, a reasonable percentage of cases. To accomplish

this objective, in addition to an understanding of the factors involved in the regenerative process, more must be learned about the etiology of periodontal disease and those factors involved in the maintenance of health in the periodontal tissues. As we get a better insight into physiology of the tissues involved in mastication and the importance of their interaction, we will acquire a better understanding of the causes of the disorders that afflict them and how to go about curing them. The writer is confident that the problems involved will be solved and mouth rehabilitation will come to have a new meaning. If this can be realized a whole new field may be opened up for an urgently needed service to our patients.

ACKNOWLEDGEMENTS

The histological sections were prepared by Mr. W. Wilson, the photomicrographs by Dr. W. Stanley Hartroft.

The author wishes to acknowledge his indebtedness to Drs. C. H. Best, C. C.

Lucas, A. W. Ham and H. J. Barrie (University of Toronto) for their many helpful suggestions throughout the course of this work.

REFERENCES

1. Beckwith, T. D., Williams, A. and Fleming, E. C. The regeneration of rodent periodontal membrane. *Proc. Soc. exper. Biol. Med.* 24, 562, 1927.
2. Beckwith, T. D. and Williams, A. Regeneration of periodontal membrane in the cat. *Proc. Soc. exper. Biol. Med.* 25, 713, 1928.
3. Beube, F. E. and Silvers, H. F. Influence of devitalized heterogenous bone powder on regeneration of alveolar and maxillary bone of dogs. *J. D. Res.* 14, 15, 1934.
4. Beube, F. E. A study of reattachment of the supporting structures of the teeth. *J. Periodontia.* 18, 55, 1947.
5. Boedecker, C. F. and Lefkowitz, W. Gingival reattachment to the enamel and its relation to operative dentistry. *Dent. Cosmos.* 77, 1106, 1935.
6. Linghorne, W. J. and O'Connell, D. C. Studies in the regeneration and reattachment of supporting structures of the teeth. I. Soft tissue reattachment. *J. Dent. Res.* 29, 419, 1950.
7. Linghorne, W. J. and O'Connell, D. C. II. Regeneration of alveolar process. *J. Dent. Res.* 30, 604, 1951.
8. Orban, B. Pocket elimination on reattachment? *N.Y. State Dent. J.* 14, 227, 1948.
9. Ramfjord, S. Experimental periodontal reattachment in Rhesus monkey. *J. Periodont.* 22, 67, April, 1951.
10. Skillen, U. G. and Lundquist, G. R. An experimental study of periodontal membrane reattachment in healthy and pathologic tissues. *J.A.D.A.* 24, 175, 1937.
11. Stones, H. H. The reaction and regeneration of cementum in various pathological conditions. *Proc. Roy. Soc. Med.* 27, 728, 1934.
12. Waerhaug, J. The gingival pocket. *Odont. tskr.* 60, 1952. Suppl. 1.

JOINT MEETING THE CANADIAN DENTAL ASSOCIATION and THE ONTARIO DENTAL ASSOCIATION

Royal York Hotel

Toronto

MAY 15, 16, 17, 18, 1955



Convention Theme:

"Dental Progress Through Applied Research"

"No Competition"

It is not often that one turns to the classified advertising section of a professional publication for the subject of an editorial. In a recent issue of *The Journal* an advertisement was placed to publicize the fact that an established dental practice was being offered for sale. After enunciating most of the advantages which would accrue to the purchaser, the advertisement concluded with the terse comment, "no competition".

The sands of time have not been running so long, that the expression "competition" in relation to the proximity of other dental practitioners, is beyond the memory of most of us. There was a time when a fellow dentist was regarded almost as an adversary in the acquisition and retention of an adequate practice. Progress, however, as in most phases of human endeavour, has taken place in this broad realm of ethical professional relations, and today, almost without exception, dental practitioners regard each other as confrères—literally, "brothers together".

Unquestionably, the general public expects from a group of professional individuals a code of behaviour not generally discernible at a commercial level. Essentially, commercial firms deal with the public *en masse* and therefore a high degree of competition is necessary in order to acquire a reasonable share of the public's utilization of a product or service. On the other hand, a professional group rendering a health service is concerned with the public as individuals and thereby a much more personal relationship is established. It is because of this association that a high degree of ethical behaviour is not only expected but is, in effect, of absolute necessity, if the confidence of those who seek our services is to be maintained.

Professional relationships engender professional responsibilities. It is indigenous to dentistry that its practitioners render all possible assistance to each other in the accomplishment of the duties of the profession. If new technological methods, materials, or medicaments are developed by a dentist, then it becomes an ethical requirement to share these advances with his confrères. Gone, we hope, are the days of the charlatan who proclaimed his methods and abilities to be superior to those performing the same general functions. It is, however, a matter of conjecture whether or not, on occasion, a certain sense of personal regard is felt when the treatment service of a patient's former dentist receives some denunciatory or disparaging comment. Derogatory remarks of another's service undermine a patient's confidence in the entire profession, including, of course, the critical dentist. In other words this is a game at which everyone loses. There are very definite channels established by the profession for action should instances of gross malpractice occur. None of these passages leads to direct commentary to the patient.

The term "competition", then, is noxious and the perpetuation of the concept enunciated by such a word is not in the best interests of the profession or the people we serve. "Competition" has no place in a lexicon of dental terms.

Christmas 1954

Once again, it is our privilege to extend to all our readers, a sincere hope that Christmas 1954 will hold a measure of happiness, full to overflowing. The turn of world events during these last few months gives us all cause for a renewal of faith in the message which is Christmas—"Peace on earth, goodwill to men." It is our earnest prayer that the coming days will enable men, women and children of every land to have freedom of speech and worship and freedom from want and fear.

WESLEY J. DUNN.

Book Reviews

The American Textbook of Operative Dentistry by Arthur B. Gabel. Published by the Macmillan Company of Canada. Pages 626. Price \$10.00.

The Ninth Edition of the American Textbook of Operative Dentistry masterfully fulfills the objectives as laid down by the author in his preface.

As a survey of the recent developments in the operative field, the text is certainly up to date. Present day concepts of caries control and preventive aspects elaborate upon the biological trend in Operative Dentistry.

Discussion in the textbook is sufficient to outline techniques rather than to laboriously search into detail. In sponsoring a biological outlook, Dr. Gabel strives to stimulate the student through a composite diagnostic procedure to arrive at a conclusion based upon principle, rather than the common "pattern interpretation", so prevalent in our mechanical procedures.

The author shows his reluctance to radicalism by his adherence to many of the seldom used porcelain inlay procedures and by his considered omission of the chapter on self curing resins. Upon the latter I, personally, concur most heartily.

The chapter on Mechanical Principles proved most interesting. One becomes amazed at the common sense logic that can become a living part of our mechanical procedures as we insert restorative media to our complex base—the human tooth. The effects of this thinking may be vastly extended into the realm of Crown and Bridge and Periodontology.

The contributions by the eminent list of associates brings fresh life and enthusiasm into each

chapter, molding the whole into a most worthy addition to the literature on Operative Dentistry.
J. D. Purves.

Periodontia by Edgar D. Coolidge and Maynard K. Hine. Published by the Macmillan Company of Canada Ltd. Pages 384. Price \$7.50.

There were many gems of wisdom in this text of periodontal therapy such as that in the chapter on 'Use of a Toothbrush', which quotes Fenton as recommending for a dentifrice 'equal parts of water and elbow grease'.

The text suffers from too many quotations. These quotations naturally vary in style of writing, dependent upon the author. Separately their style may be clear and have a natural continuity: collectively they produce a disjointed script. On one half page alone there were eleven names and seven references. To a graduate seeking references for further reading, this text is valuable, both for a historical and a factual record: to the undergraduate, its value is diminished by the multiplicity of surnames appearing in virtually each paragraph.

Further detracting from its value for undergraduates' work is the unqualified references to untried and unsubstantiated therapy, such as anti-formin.

It is this writer's belief that, until there has been corroboration by independent investigators, untested therapy has no place in reference textbooks.

The text is a testimonial to the continuous intensive reading of its authors and the 'gems' a tribute to their own wealth of practical experience.

W. F. Walford

The Association

*President's Visitations for February,
March 1955*

Arrangements have been completed for President Anderson to address the following societies:

Manitoba Dental Association—	Feb'y. 21
Saskatoon Dental Society—	Feb'y. 23
Edmonton Dental Society—	Feb'y. 24
Calgary Dental Society—	Feb'y. 25
Victoria Dental Society—	Feb'y. 28
Vancouver Dental Society—	Mar. 1
Okanagan Valley Dental Society—	Mar. 3
Lethbridge Dental Society—	Mar. 5
Regina Dental Society—	Mar. 7

Recommendations Made to WHO

At the request of Dr. M. G. Candau, director-general of the World Health Organization an international group of dental consultants met at Geneva last month. The meeting developed through the efforts of the International Dental Federation. Two representatives from United States were in attendance namely Dr. John W. Knutson, chief dental officer of the U.S. Public Service, who served as Chairman and Dr. Philip E. Blackerby, of the A.D.A. Council on Dental Education.

The recommendations made were that WHO organize and train a dental staff for the operation of a dental programme which would include the collection of information regarding the prevalence of dental disease and the development of formal activities in the fields of scientific dental research and dental health education.

Cablegram from British Dental Association

President and Members of British Dental Association deeply concerned loss of life and damage caused by hurricane. Sincerely trust you and all colleagues escaped unscathed.

Parker Buchanan,
Secretary.

New Edition of "Facts" — Price Reduced

A new edition of C.D.A. publication on fluoridation entitled "Facts" is now available at \$2.00 per 100 copies. This leaflet is in question and answer form and intended for public information. An endeavour has been made to give answer to the questions currently being asked by the public. Orders should be addressed:

Canadian Dental Association,
234 St. George Street,
Toronto 5, Canada.

Fluoridation Notes

- World's largest fluoridation project begins (Sept. 22/54) in Philadelphia—population over two million.
- Dartmouth, Nova Scotia voted in favour of fluoridation on Sept. 22nd last.
- It is stated that nearly 24 million persons in the United States and its territories now have access to fluoridated water. (1000 municipalities.)
- U.S. Army has decided to install fluoridation facilities for the water supplies of army posts.
- In the October issue of Scientific Monthly, published by the American Association for the Advancement of Science, Dr. James Shaw, of Harvard University School of Medicine, concluded that "there can be no longer any doubt that the fluoridation of public water supplies represents the first major step in the prevention of tooth decay."
- Commenting on cities which have rejected fluoridation, the Sept. issue of Industrial Medicine and Surgery said, "It is only a question of time until fluoridation will be the rule in the United States, wherever public water supplies are provided — In the meanwhile, the unvoting, small children of these recalcitrant communities suffer."
- Swift Current, Sask., City Council makes decision to fluoridate water supply.
- Prince George, B.C.—City Council vot-

ed unanimously on October 4th last to inaugurate fluoridation beginning next year. It is believed this is the first city in British Columbia to take such action. —Three municipalities in Nova Scotia have now approved fluoridation, namely Halifax (February '54) Kentville (March '54) and Dartmouth (October '54).

The Ultrasonic "Drill"

An article entitled "New Dental Drill Does Not Hurt" appeared in the October issue of U.S. *Better Homes and Gardens*. This article stated that a new type of

ultrasonic device for cavity preparation manufactured by the Cavitron Equipment Corporation is "now generally available to dentists who wish to add it to their equipment." The American Dental Association immediately made inquiry of the President of this company and in reply received statement that the devices are presently available only for investigative purposes. He further stated "It is not our policy to offer machines for general routine use now. Regret the omission of this information in the *Better Homes and Gardens* article although it was supplied by them."

The Library

The Library of the Association consists of practically all the books related to dentistry which have been published during the last ten years. A considerable number of volumes published earlier are also available.

The Library has been made possible through the generosity of interested members of the Association. All monies received are used for the purchase of books. The Association bears the cost of administration.

For the benefit of members and all others interested, the library is open daily from 9.00 a.m. to 5.00 p.m. except Saturdays and Sundays. All dental periodicals are available.

Books may be borrowed by the membership by writing: Librarian, Canadian Dental Association, 234 St. George St., Toronto.

Additions

BELL, G. H., Davidson, N. N., and Scarborough, H. Textbook of physiology and biochemistry. 2nd ed. 1954. 1002p. illus.
BOURGOYNE, J. R. Oral Cancer. 1954. 295p. illus.
BYRD, O. E. Health Yearbook. 1953. 280p.
COOLIDGE, E. D. Periodontia. 2nd ed. rev. 1954. 384p. illus.
DAVIS, R. W. Health saboteurs. 1953. 306p. illus.
DuBRUL, E. L., and SICHER, H. The adaptive chin. 1954. 97p. illus.
GABEL, A. B. ed. The American textbook of operative dentistry, in contributions by eminent authorities. 9th ed. 1954. 626p. illus.
GOLDMAN, V. Aids to Anaesthesia. 3rd ed. 1954. 343p. illus.

LANDA, J. S. Practical full denture prosthesis. Enl. end ed. 1954. 501p. illus.
NEVIN, R. B. The diet and mastication: their effects on diffusion and on the inception of dental caries. 1954. 43p. illus.
SCHLOAT, G. W. Your wonderful teeth. 1954. illus.
SCHWARZROCK, L. H. Effective dental assisting. 1954. 375p. illus.
STONES, H. H. Oral and dental diseases. 3rd ed. 1954. 1019p. illus.
STRAIN, R. W. M. Introduction to medicine for dental students. 1954. 234p. illus.
STRUNK, F. R. An inventory of social and economic research of health 1953. 108p.
WOODRUFF, M. F. A. Surgery for dental students. 1954. 326p. illus.
YATES, F. Sampling methods for censures and surveys. 2nd ed. 1953. 401p.

Survey of Dental Practice in Canada—1954

Part I—Introduction

The need for statistical data in dealing with the arising issues respecting health services is well recognized. A time did exist when the word of a well-known individual as representative of a group was accepted at face value without supporting factual data. Today the position taken must be supported by fairly recent and reasonably accurate statistical data if the statement made is to be sustained.

The information derived from this survey will meet a continuing demand made of the Canadian Dental Association for statistical facts related to the practice of dentistry. The survey was made in a broad manner for the reason that the immediate future need cannot be anticipated. One example, where the existence of reliable data is vital for the profession, is in dealing with matters relating to proposed legislation in the health area. The discovery of errors in factual data after the health plan is legislated into effect is too late and would place the dentist in an untenable position.

This survey constitutes the first comprehensive endeavour to collate such data in Canada. On the other hand several surveys conducted during recent years have produced certain sparse figures which while

often doubted could not be refuted without data compiled upon a more satisfactory basis.

The resulting figures should prove helpful to any member of the profession if studied carefully. The statistics on income and expenses will be related to various conditions as found in dental offices. For example, the analysis will show how the income of dentists varies with such factors as length of appointment, number of chairs, personnel employed, equipment in office, and several other conditions.

Facts established by the survey respecting number of patients per year, average number of sittings per patient, number of hours worked by dentist, and other factors are exceedingly important in planning dental health programmes.

In 1945 the Association cooperated with the Dominion Bureau of Statistics in conducting a survey for the years 1941-2-3-4. The survey of 1945 was not as comprehensive as the present one. However the methods employed are similar and consequently comparable. The resulting figures for the year 1944 from the 1945 survey will be presented on a comparative basis in certain instances. Such comparison will indicate fundamental changes during the ten year period, 1944 and 1953.

Questionnaire

Canadian Dental Association

Survey of Dental Practice

It will be easier and faster for you to fill out this questionnaire if you read it through to the end before starting to answer the questions.

The questionnaire has been designed to minimize time for you as far as possible.

Answers in the squares may be indicated with a check mark.

Blank spaces make tabulation difficult and request is made that you fill in every space.

Some questions may prove difficult to answer with accuracy—a good estimate is better than no answer. Where the question does not apply to you write in N/A.

Part I of the questionnaire is for those in practice either full or part-time.

Part II of the questionnaire is for those in full-time salaried positions only.

Disregard code numbers in brackets on right margin. They are merely to facilitate tabulation of answers.

•
A nos membres de langue française,

Ce questionnaire vous est envoyé en anglais afin d'éviter toute identification au cours du travail de classification. Comme nous désirons que cette enquête soit faite avec la plus entière discrétion, l'emploi d'un questionnaire des plus uniformes nous a paru nécessaire. Nous comptons sur votre généreuse coopération pour obtenir de cette enquête le meilleur résultat possible.

Questionnaire No.

PART I

1. Age (1-4)
2. Year of graduation (5-6)
3. Sex: 1. ☐ male 2. ☐ female (7-8)
4. Indicate province and size of municipality where you practice. (9)
- Province (10)
- Size of Municipality: (11)
0. ☐ under 1,000 5. ☐ 25,000 to 50,000
1. ☐ 1,000 to 2,500 6. ☐ 50,000 to 100,000
2. ☐ 2,500 to 5,000 7. ☐ 100,000 to 250,000
3. ☐ 5,000 to 10,000 8. ☐ 250,000 to 500,000
4. ☐ 10,000 to 25,000 9. ☐ 500,000 and over
5. How many weeks did you work as a practising dentist during the year 1953? weeks. (12-13)
6. How many weeks did you work as a dentist, other than in your office (e.g. as part time teacher in a dental school, administration appertaining to dentistry etc.) during 1953? weeks. (14-15)
7. How many weeks did you spend on vacation during 1953? weeks. (16-17)
8. How many days were you absent from work in 1953 because of illness or other disability? days. (18-20)
9. For the average week estimate the number of hours spent as follows during 1953—Hours at the chair hours per week. (21-22)
- Hours in the laboratory hours per week. (23-24)
- Other hours in dental office hours per week. (25-26)
10. How many different patients were treated in your office during 1953? patients. (27-30)
11. How many patient visits (sittings) did you have during 1953? sittings. (31-34)
12. What was the average length of your appointments during 1953? (35)
1. ☐ 30 minutes 3. ☐ 1 hour
2. ☐ 45 minutes 4. ☐ over 1 hour
13. In what type of practice were you engaged in 1953? (36)
1. ☐ general practitioner 2. ☐ specialist
- If a specialist, check *one* specialty below (37)
1. ☐ Oral Surgeon 4. ☐ Pedodontist
2. ☐ Orthodontist 5. ☐ Other (specify)
3. ☐ Periodontist
14. Did you have X-ray equipment in your office during 1953? 1. ☐ Yes 2. ☐ No. (38)
15. Did you administer general anaesthesia in your office during 1953? 1. ☐ Yes 2. ☐ No. (39)
16. How many dental chairs were used in your office during 1953? chairs. (40-41)
17. Indicate number employed personnel by you *in your office* during 1953. (A person who did not work full time or did not work during the whole year should be indicated as a fraction, (e.g. half-time employee who worked six months should be recorded as $\frac{1}{2}$).
- Dentists (42-43)
- Dental Hygienists (44-45)
- Dental Assistants or Nurses (46-47)
- Secretaries and receptionists (48-49)
- Dental Technicians (50-51)

18. Are you in partnership with one or more other dentists? 1. ☐ Yes 2. ☐ No. (52)
In answering items 19 to 23 give figures on the basis of an individual practitioner. If you happen to be a partner or in some other relationship with another practitioner please make the necessary calculations to represent yourself as an individual.
19. Gross receipts from practice during 1953. \$..... (12-17)
20. Total expenses in operating practice during 1953. \$..... (If shared enter only your share). (18-22)
21. Your total net income from practice before paying income taxes during 1953. \$..... (23-27)
22. Income from part-time dental appointment at a dental school, hospital etc. during 1953. \$..... (28-31)
23. State professional expenses for 1953 in operating practice
- | | | |
|--|---------|---------|
| Office rent (If you own office, please estimate) | \$..... | (32-35) |
| Utilities (Gas, light, telephone) | \$..... | (36-38) |
| Insurance (Liability and equipment) | \$..... | (39-41) |
| Commercial laboratory expenses | \$..... | (42-44) |
| Dental Supplies (not equipment) | \$..... | (45-48) |
| Salaries to employees (Assistant, etc.) | \$..... | (49-51) |
| Depreciation | \$..... | (52-54) |
| Other (Laundry, office supplies, etc.) | \$..... | (55-57) |
-
- Total (should equal item 20)
24. State average fee charged during 1953 for the following operations:
- | | |
|-------------------------------------|---------|
| Two surface amalgam filling \$..... | (58-59) |
| Two surface gold inlay \$..... | (60-61) |
| Silicate or acrylic filling \$..... | (62-63) |
| One full denture \$..... | (64-66) |

February 1954.

PART II

For Dentists on full-time salary basis of payment ONLY

- | | | |
|---|--|---------|
| 1. Age..... | 2. Year of graduation..... | (5-6) |
| 3. Sex: 1. ☐ male | 2. ☐ female | (7-8) |
| 4. Indicate type of employment | | (9) |
| 1. ☐ federal | 4. ☐ dental school | (10) |
| 2. ☐ provincial | 5. ☐ by another dentist | |
| 3. ☐ municipal | 6. ☐ hospital | |
| | 7. ☐ other | |
| 5. Total amount of salary received during 1953 (Include bonuses etc. as salary) \$..... | | (11-15) |
- February 1954.

During February 1954 the above questionnaire was distributed to all dentists in Canada. A letter, explaining the purpose, accompanied the questionnaire and a return postage paid envelope was enclosed. By

the cut-off date, June 11th, approximately one-third of Canadian dentists had returned the completed questionnaire. The percentage returned of the possible replies by provinces was as follows:

British Columbia	28 + %
Alberta	45 + %
Saskatchewan	40 + %
Manitoba	30 + %
Ontario	28 + %
Quebec	21 + %
New Brunswick	31 + %
Nova Scotia	30 + %
Prince Edward Island ...	29 + %
Newfoundland	31 + %

It is considered that the distribution of returns by provinces is satisfactory for the purpose of this survey. The total return is considered satisfactory, as to accuracy, for the intended purposes of the survey, and comparable to percentage returns of other surveys of this type. The question does

arise whether or not those making the return are representative of the profession as a whole in respect to geographical location, age, and other variables. As shown above the geographical distribution was representative by provinces. The percentage of respondents according to size of city will be shown as quite satisfactory. Examination of the tabulated data shows good distribution of the respondents as to age and year of graduation. However, it should be kept in mind that the data presented will be based solely on the returns made by the respondents.

The findings of the survey, related to the economics of dental practice in Canada during the year 1953, will be presented serially in subsequent issues of the Journal.

Committees and Councils

Specialists and Specialization

This Committee has had as its objective the development of a suitable model plan to serve as an aid to any of the component provincial bodies considering the certification of Specialists.

The following basic considerations have been accepted by the Board of Governors:

BY-LAWS TO REGULATE SPECIALISTS AND SPECIALIZATION

No licenced dentist shall announce or hold himself out to the public as a specialist or as being specially qualified in any particular branch of dentistry, unless he has complied with the additional requirements established by the Board.

The Board will reserve the right to give such examination as it may deem necessary to determine the qualifications of applicants, and may secure such assistance as the Board may deem advisable in determining the qualifications of applicants.

Every dentist who has been granted a specialist's certificate and who is practising as a specialist must limit his practice to that specialty.

The Board will have the right at any time to revoke a certificate of qualifica-

tion if it shall determine in its sole judgment that a candidate who has received his certificate either was not qualified to receive it, or has become disqualified.

Re-Application may be made by any dentist whose certificate of qualification as a specialist has been revoked.

RULES AND REGULATIONS FOR CERTIFICATION OF SPECIALISTS

In the profession of dentistry a specialist is defined as a graduate dentist who through further study and practice has attained advanced knowledge and skill in a particular field and who limits his practice to that field and whose aim should be—

(1) To render a specially qualified service to the public.

(2) To advance the science of the particular specialty.

(3) And to elevate the standards pertaining to the practice thereof.

Any licensed dentist who has confined his practice to a recognized specialty and who has been recognized by the Board as so doing, may upon satisfying the Board as to qualifications, good character and ethical conduct and upon payment of the required fee be granted a certificate qualifying him to practise as a specialist.

The following fields of dentistry are suggested for recognition as Specialties—Endodontics, Oral Surgery and Prosthodontics, Orthodontics, Paedodontics and Periodontics.

New candidates for certification as a specialist must have completed a graduate course in the specialty designated in any school or institution approved by the Board. He must provide evidence of having passed the necessary examinations to meet the requirements of the Board plus an additional examination at the discretion of the Board. He must limit his practice to his special field.

The Board should set a suitable fee for

registration, examination and administration; should control examinations and certification and should issue a certificate.

(The term "Board" in all the above recommendations shall mean the Provincial licensing body.)

The committee is continuing its study to endeavour to formulate suitable recommendations regarding such matters as defining the Specialties, determining length of time of practice required before certification is granted and other pertinent questions which arise as the plan is evolved.

A. Gerald Racey, Chairman.

The Corps

Brigadier E. M. Wansbrough attended the Annual Fall Clinic of the Montreal Dental Club in Montreal, October 20-22, 1954.

Lt.-Col. I. A. L. Millar, Commandant of the R.C.D.C. School, and Major A. T. Roger also attended the Montreal Fall Clinic. Major Roger presented a table clinic entitled "Surgical Preparation for Dental Prostheses".

Capt. R. A. Fell has been promoted to the rank of Major. Major Fell, 34, was born in Winnipeg, Man. He served in the R.C.A.F. in Canada and Overseas from 1939 to 1945. Major Fell attended the Faculty of Dentistry, University of Toronto, and as an undergraduate was appointed 2/Lieut. in the R.C.D.C. in September 1949. On graduation in 1950, he was appointed Captain and has served in No. 13 Coy. R.C.D.C. Trenton and in Europe. Major Fell is employed at R.C.A.F. Stn., Chatham, N.B. Major Fell is married and has three children.

Capt. R. A. Gray has been promoted to the rank of Major. Major Gray, 35, was born in Rocanville, Sask. He served in the C.D.C. as a dental technician in Canada and overseas from 1940 to 1945. Major Gray attended the Faculty of Dentistry, University of Alberta, and as an undergraduate was appointed 2/Lieut. in the R.C.D.C. in September 1949. On graduation in 1950, he was appointed Captain and has served in No. 11 Coy. R.C.D.C. Edmonton and the Far East. Major Gray is attached to R.C.S.M.E.

at Chilliwack. Major Gray is married and has five children.

Lt.-Col. H. L. Harris, C.O. No. 12 Coy., sailed on board H.M.C.S. "Quebec", as dental officer, on October 16, for the southern training cruise.

Capt. C. E. Gosselin was released from the R.C.D.C. in October.

From time to time, reference has been made in the press to subsidization schemes for dental students. The R.C.D.C., faced with a large deficiency in dental officers, herewith outlines briefly the terms and benefits of the subsidization plan, now available to dental students.

If the applicant is found suitable by the Officer Selection Board and the Director General of Dental Services, he may be granted the rank of 2/Lt. (second lieutenant) as a regular officer or short service officer during his final 21 months at university. Twenty-one months is the period covered by the last two academic years:

Penultimate year—	Sep. to May incl.—	9 months
Summer—	Jun. to Aug. incl.—	3 months
Final year—	Sep. to May incl.—	9 months

Total—21 months

If he applies before the commencement of his penultimate year, he will be enrolled immediately in the C.O.T.C. (Canadian Officers' Training Corps) and transferred to the Canadian Army Regular, effective the

date of commencement of the penultimate academic year.

If the applicant applies during his final year, he will be enrolled in the Canadian Army Regular, effective the date of application as certified by the Resident Staff Officer at the university.

The pay of a 2/Lt. is:

	Married per month	Single per month
Pay of rank	\$185	\$185
Marriage Allowance	\$ 40	—
Subsistence Allowance	\$ 91	\$ 65
Totals	\$316	\$250

In addition to receiving the pay and allowances of a 2/Lt. at university, officers enrolled under this plan will have the cost of tuition paid by the Department of National Defence, and will be reimbursed for actual books and instruments purchased during the subsidized years, up to the maximum amount of \$75.00 per year.

On graduation, an applicant is promoted to the rank of Captain on June 1 of the graduating year.

Responsibility Allowance of \$60 per month is paid effective the date the officer is taken on strength of a Canadian Army Regular dental unit.

R. C. D. C. Association

The following were elected to the executive of the Association at the annual meeting in Wallis House, Ottawa, on September 10th and 11th, 1954:

Honorary Presidents — Col. D. S. Coons, Col. L. V. Janes.

Past President—Lt.-Col. J. M. McDougall.

Correspondence

Very many dental graduates will recall, with pleasure, the stimulating and enlightening course of lectures, which Dr. F. N. Doubleday of London, England, delivered several years ago, when on a visit to Canada.

Many, too, must have deeply regretted reading in B. W. Weinberger's *An Introduction to the History of Dentistry* (Vol. I, p.479, rt. col., 11, 31 & 32) the statement that this most distinguished and deservedly popular figure in international dentistry died in 1934, to wit:

"Doubleday, Frank Nelson (1868-1934)"

This should most assuredly read:

Doubleday, Frederic Nicklin (1885-).

(The reference given—*Proc. Roy. Soc. Med.* 1931, 24: 1067—leaves no conceivable doubt).

Subsidized officers who apply for release before completion of 5 years' service, after being licensed to practise, will be required to reimburse D.N.D. in the following amounts:

- (a) if released before completion of 3 years' service after being licensed to practise — the total cost of subsidization, including pay and allowances, received whilst at university;
- (b) if released after 3 years' service after being licensed to practise but before 5 years' service after being licensed to practise — at the rate of one-fifth of the total cost for each complete year not served.

The pay of a Captain in the Canadian Army Regular is:

	Married per month	Single per month
Pay of rank	\$290	\$290
Marriage Allowance	\$ 40	—
Responsibility Allowance	\$ 60	\$ 60
Subsistence Allowance	\$110	\$ 94
Totals	\$500	\$444

A progressive pay increase of \$25.00 per month, for the rank of Captain, is made at three-year intervals.

President—Lt.-Col. H. R. McLaren.
President-Elect—Lt.-Col. T. J. Cooke.
1st Vice-President—Lt.-Col. J. E. Merritt.
2nd Vice-President—Lt.-Col. D. W. Henry.
Secretary—Lt.-Col. D. W. Henry.
Treasurer—Lt.-Col. G. K. Clarke.

Before drawing attention to this glaring misstatement, I have waited in vain for its correction to appear in the dental press.

Incidentally, I had the pleasure, within the past few weeks, of spending an evening with a great friend of F. N. Doubleday. On inquiring as to his health, I was delighted to learn that this outstanding dental historian and Consulting Dental Surgeon to Guy's Hospital is both well and active.

I do feel that such information should be afforded the widest publicity. Otherwise, this error will be perpetuated, lead to confusion and prove an unnecessary problem for future dental historians.

J. Menzies Campbell,
D.D.S., F.I.C.D., F.R.S.E.

Economic Security

Taxation Advantages in Assurance

By E. L. R. WILLIAMSON, M.B.E., B.P.A., F.R.E.S.

Consulting Economist and Administrator
of the CDA Plan.

It is an old saw that "Nothing is certain but death and taxes." Stated in the positive form, there is nothing more certain than the continuance of a high level of taxation with the balance of probabilities towards increase rather than decrease, except in election years.

The average professional man in Canada today bears between 28% and 32.5% Income Tax on the last additions to his income—i.e., upon his investment income which is on top of his professional income. This means that if he is earning a conventional 3% in "gilt-edged" securities, his actual, "take-home" interest is 2.16% to 2.025%. If earning an apparently more attractive 5% in securities involving some element of risk, he actually will receive only 3.6% to 3.375%.

In conformity with Government policy to drive investment—particularly that of professional men—into "risk investments," there is some abatement of taxation in regard to dividends accruing from common stocks of companies developing our natural resources, but by definition this involves a risk as to both maintenance of earnings and safety of principal.

It is right and proper that those with the means to do so should develop the country and undertake the risk of so doing; but development and security, like charity, begin at home. The *first* concerns of the professional man must be for his family to have the secure means to the development of their lives, and for the basic security of his wife and himself in retirement.

We saw in the previous Article that a male Canadian must have \$19,740.00 to provide only \$100.00 per month over the years of normal life expectancy ahead of him at age 65. We also saw that if a man could earn 3% compound interest unfail-

ingly over 35 years—age 30 to age 65—he could accomplish this with annual savings of \$263.30. But this did not take into consideration the effect of Income Tax upon the interest earnings.

After the effect of Income Tax — at present rates, annual savings must be increased to \$395.00 annually to achieve the same results, and without any allowance for fluctuations in earnings and capital values, all of which could not in actual practice be expected to remain conveniently intact.

It is, therefore, of salutary importance to the Economic Security of the Dental Practitioner to take into consideration the fact that he may secure through assurance not only the automatic compounding of interest, which he would find so difficult to achieve personally, but also a freedom from taxation on the annual accruals which he could achieve in no way except through assurance or an investment trust.

The question of taxation does not end, however, with the taxation of investment earnings; it arises also at the other end—when retirement income is drawn: the pension arising from an assurance contract is, to all intents and purposes, free of Income Tax. A very large pension indeed, say \$1000.00 would have a certain portion taxable, but this is a theoretical situation only.

In sum, freedom from taxation of accrued earnings, plus freedom from taxation when drawn, plus automatic compounding of interest, plus safety of interest and principal, makes assurance the most reasonable answer conceivable to the professional man's savings problem.

Editor's Note:

The Editor wishes to announce the following Articles on "Economic Security in Dental Practice" which will appear in the first six months of 1955. Index to the 1954 series appears in the January, 1954 number of the "Journal."

Members are reminded that they may submit subjects which they would like to have discussed in this series. Individual problems will be answered personally.

ARTICLES

- XIII "Assurance and Investment Trusts"—
—A Comparison
- XIV "Participating vs. Non-Participating Assurance"—Are "dividends" really profitable?
- XV "Your Will and Your Family"—Part 1
(Guest Article by H. Allan Leal, B.A. recognized authority in this field. Lecturer on Wills and Administration of Estates at Osgoode Hall Law School.)
- XVI Your Will and Your Family"—Part 2

The essential role of your will if your wishes are to be met and your dependents protected.

- XVII "The Economics of Home Ownership"—
Home ownership as a cornerstone of personal and family security.
- XVIII "Good Title, Its Importance, and How to Ensure it."—Part 1
Another guest article by an Osgoode Law School authority.
- XIX "Good Title, Its Importance and How to Ensure it."—Part 2
Do you really own your home?

The Provinces

Quebec

The 30th Annual Fall Clinic of the Montreal Dental Club was officially opened by the president, Dr. F. A. Edwards, at the first luncheon session on Oct. 20th, 1954. A cordial welcome was extended to one and all with the thought that "Owing to the many dental health education programmes now in progress, a growing desire has arisen on the part of the public for adequate dental service that makes it imperative that we, as dentists, prepare ourselves as best possible to meet this need."

For the first time in as many years as we wish to remember the Chairmanship of the Fall Clinic was to change hands. Dr. D. Bruce Ward our new Chairman was to take over the duties so ably filled these past years by Dr. M. L. Donigan. An unforeseen illness in a member of his family took Dr. Ward from these onerous duties and once again the mantle of responsibility was slipped back on the capable shoulders of Dr. Donigan.

However unfortunate as it may seem this was to be culminated by a special presentation on behalf of the Montreal Dental Club for the outstanding service of Dr. Donigan in directing these fall meets. This event took place at the closing mixed luncheon where Dr. Dan MacDonald in his own inimitable style extended our gracious thanks to a job well done. A beautiful painting of a Laurentian scene was our token of appreciation. Mrs. Donigan also received a lovely gift from the Montreal Dental Nurses and Assistants Association along with a corsage and a bouquet of roses.

Three essays, six registered clinics and fourteen table clinics were offered to the members of the dental profession. The first

essay was presented by Dr. E. V. Zegarelli from Columbia University in which he discussed the "Allergic Diseases of the Mouth." It was a very interesting and edifying talk and it was noted that there were many clinical lesions of the oral cavity which can be described as allergies.

In the second general session Dr. C. L. Strachan of London, Ont., discussed a consideration of our operative efforts, with practical suggestions to ease our daily efforts and render our clientele a valuable service, concluding with a demonstration of daily operative aids.

On Friday the third general session heard a discussion of "The nature and manifestations of the hemorrhagic diseases, their importance in Dental Surgery, the value and limitations of present-day therapeutics." This was given by Dr. R. L. Denton, Associate Professor of Pediatrics, McGill University.

Registered Clinics:—

Dr. Lester W. Burket from Philadelphia, Pa., gave as his subject "Diagnosis of Common Lesions of the Oral Mucosa." He endeavored to outline the dentist's responsibility in diagnosis and a rational procedure for diagnosis. The common acute and chronic diseases of the mucosa were discussed from the standpoint of diagnosis, differential diagnosis and treatment. The lecture was extensively illustrated with Kodachrome slides. Dr. Ralph W. Phillips from Indianapolis, Ind., had as his topic "Common Causes For the Failure of Materials in Operative Dentistry." He maintained that a high percent of the clinical failures of restorative materials can be attributed to their improper use. Recent research has presented the dentist with many new ma-

terials and techniques as well as perfection of older methods. He endeavored to evaluate these newer developments and covered such points as amalgam failures, wax pattern distortions and porosity in dental castings as well as inaccuracy in hydrocolloid impressions. Self cured resins were mentioned with respect to their clinical behaviour.

Commander Robert B. Lytle of the U.S.N. enlightened his audience with "Tissue Changes of Supporting Base Areas." He stressed the need for the recovery of the soft tissues which have been traumatized and distorted by ill-fitting dentures prior to impression for new dentures. Old dentures should be left out for two to three days in most cases before impressions for new ones be taken. A no mean task in this esthetic age. Kodachrome slides to prove the tremendous changes that take place were in full view.

A further representative of the U.S.N., Captain Alvin H. Grunewald, presented a new method of "Mixing Silicate Cements." This new method was the mixing of silicate cements in a closed container under water to eliminate the effects of exposing the cement liquid to air. A higher powder-to-liquid ratio is made possible through dissipation of the heat of reaction by the water in which the mix is made. Silicate cement restorations of high compressive strength, low solubility and small shrinkage during setting can be made repeatedly regardless of atmospheric conditions.

A very excellent talk accompanied by a film on the "Equilibration of the Occlusion of the Natural Dentition" was given by Dr. Nathan Allen Shore of New York. It was an eye opening experience to see the technique evolved by Dr. Shore and his fellow compatriots.

Our own Dr. A. D. Richardson covered the problems encountered in the field of root canal therapy. He discussed the problems of diagnosis, bio-chemical instrumentation and treatment. He feels that with proper techniques 85% of teeth can be saved.

In addition to the Fall Convention the Montreal Dental Nurses and Assistants held their own Twentieth Annual Convention.

P. A. L.

The Annual Fall Meeting of **The Montreal Section of the American Academy of Dental Medicine** was held on Saturday and Sunday September 18th and 19th at Mont Gabriel Club, Piedmont, Que. The meeting was attended by members and their wives and guests. Dr. George F. Clarke of Boston, National President of the Academy was among those present. The scientific session

was held on Saturday afternoon. The meeting was opened at 3 p.m. with the Section President, Dr. Louis J. Rosen in the chair. He introduced Dr. Gibson E. Craig, Lecturer in Dermatology at McGill University who delivered an illustrated lecture on "The Dermatologist Looks at Oral Lesions."

Discussion followed the lecture. Dr. Rosen put the following question to Dr. Craig:

Teeth and epithelium of the gingivae are ectodermal outgrowths as skin is. Being ectodermal derivatives, there must be a close relationship between these tissues. What has always interested the dentist is that there are patients presenting an oral lesion who otherwise are in apparent good health. Has it been your experience that there are changes in the mouth which are incipient symptoms of systemic involvement which may become a symptom for the physician only after one, two or three years? How can a dentist secure interest from the medical profession in cases which show no outstanding systemic symptoms but have definite degeneration about the teeth?

Dr. Craig answered as follows:

"I am not able to come up with any very good answers. However, it is my experience that doctors are interested mainly in the things they know most about, and I feel we doctors do not know as much about teeth and gums as we might. If doctors, in examining patients' mouths, saw what the dentist sees, he would correlate it with other findings, and eventually, we would have better understanding of the relationship between lesions of the mouth and systemic disease. The situation could be aided by giving medical students more instruction in dentistry. I would suggest that you give your question to several doctors, and perhaps from a group of answers, a worthwhile one could be obtained". Dean Ernest Charron of the University of Montreal Dental School extended the thanks of the Section to the clinician.

L. J. R.

Alberta

Members of the **Peace River District Dental Society** met recently at Fairview, and many important issues were discussed. Dr. William Orobko of Edmonton was the guest speaker at the meeting.

Two new members have been added to the academic staff of the Faculty of Dentistry, University of Alberta, namely Dr. J. S. Little in the Crown and Bridge Department and Dr. R. D. Haryett in the Orthodontic Department.

The biennial fall refresher course of the

faculty was held recently under the able chairmanship of Dr. Bruce MacKenzie. There was an attendance of 158 dentists from Saskatchewan, British Columbia and Alberta. Dr. R. W. Phillips, Associate Professor and Chairman of the Department of Dental Materials, Indiana School of Dentistry, was the main clinician for the two days. His theme was "The Latest Developments in Proper Manipulation of Dental Materials," and was very enthusiastically received by those attending. Various table clinics, clinical demonstrations, and essays were presented by guests from Lethbridge and Calgary and by members of the faculty.

C. G. D.

British Columbia

A new member was named to the Council of the **College of Dental Surgeons of B.C.** when Dr. Emery Jones, member for New Westminster, tendered his resignation in order to devote his whole attention to the duties of Registrar of the College. According to the by-laws "the remaining members of the Council may fill such a vacancy until the next election." But the Council decided to obtain an expression of opinion from the dentists of the district. As a result of this opinion poll, the one receiving the majority of votes, Dr. L. B. Alexander of Haney, was appointed to fill the vacancy.

The first fall meeting of the **Prince George and District Dental Society** was held on October 4th. Dr. Julian Thorsness, Secretary, announces the successful and gratifying conclusion to a year-long effort to promote fluoridation of the communal water supply. The city council has passed the fluoridation project, which will be installed after the new year.

The **Division of Preventive Dentistry** states that 14 sets of specially designed portable dental equipment have been used with success in many of British Columbia's smaller communities. The equipment is used regularly by Health Unit dentists and is also loaned to dentists in private practice who are co-operating in providing community dental clinics for young children.

Since the Health Branch made sets of this equipment available, hundreds of children have received expert dental care. Previously, some of these children had to travel more than 100 miles to the nearest dentist.

The units have been widely used in communities without a resident dentist. This summer the equipment saw service in Merritt, Stewart, Golden, Edgewater, Tahsis, Zeballos, Tofino, Squamish, McBride, Fort

St. James, Ganges, Gibsons and 100 Mile House.

The November dinner meeting of the **Fraser Valley Dental Society**, held in Mission, was of a somewhat different nature, as the society played host to the dentists of New Westminster to repay a pleasant evening enjoyed last term in the Royal City.

Dr. J. W. Neilson, Associate Professor of Periodontology at the University of Washington, was the special clinician. A talented speaker, he gave a practical address on "Periodontal Problems of Present Day Practice."

The **Vancouver and District Dental Society** had another well-attended gathering in the Hotel Vancouver on November 2nd when the guest speaker was Dr. Samuel A. Brandon of the University of Oregon Dental School. The afternoon presentation was an illustrated lecture on "Diseases of the Oral Cavity and Their Treatment," and the evening topic (also illustrated) was "Oral Surgical Procedures."

Twenty-two new members were welcomed into the organization, and Dr. E. I. Slakov, Chairman of the Membership Committee, announced a paid-up membership of slightly over 200. It is expected that this total will rise to 275 before long.

D. H. M.

Manitoba

After a warning by Dr. M. S. Loughheed, chief medical health officer for Winnipeg, that the dental problem of school children was nearing a crisis, the school board for the city unanimously supported a motion to approach the federal government for the renewal of national health grants, so that the city schools will be given adequate dental inspection. The grant received formerly from the federal government helped pay administration costs for 100 volunteer dentists; the grant was severed in June 1953.

Dr. A. F. W. Peart, assistant general secretary of the Canadian Medical Association, spoke in support of the fluoridation of communal water supplies when he addressed the Manitoba Medical Association recently.

It has been announced by Dr. M. R. Elliott, deputy minister of health, that eight Manitoba dental students have accepted government bursaries to help finance their studies, under a plan introduced this year by the province to help relieve the shortage of dentists in Manitoba.

Ontario

The annual dinner meeting of the **Academy of Dentistry**, Toronto, was held at the Royal York Hotel on Monday, October 25th. Speaking to the gathering, which was attended by more than 300 men and women, was the Hon. William James Dunlop, B.A., B.Paed., F.C.I., LL.D., Minister of Education for the Province of Ontario.

Dr. Dunlop, referring to the shortage of dentists, made the statement that 36 per cent of Ontario dental graduates go elsewhere to practise their profession. This problem, he said, is close to the top of the government's agenda.

Dr. W. James Smith, President of the Academy of Dentistry, Toronto, presided at the meeting, which was attended by many guests representing other societies and spheres of the dental profession.

Dr. J. Gordon Chalmers presented the Past President's pin to Dr. E. J. Henderson, the immediate Past President, who had the distinction of being the first Past President to receive the recently designed new pin.

Another award which found favour with the gathering was when the President presented an engraved silver tray to Dr. E. A. Grant, recently retired from the post of Director of Dental Services for the City of Toronto. Dr. Smith traced the dental efforts of Dr. Grant down over the years, and said the Academy was proud to remember in a tangible way a colleague who had made such an outstanding contribution to that phase of dentistry dealing with Dental Public Health.

In conclusion, Dr. Smith announced to the assembly that the Academy of Dentistry had donated \$200 to the Hurricane Relief Fund, which met with unanimous approval.

W. A. W.

Dr. R. L. Twible, assistant professor of dental prosthesis of the Faculty of Dentistry, Toronto, was the guest speaker at a meeting arranged by the Faculty of Dentistry, University of Toronto, and the board of directors of the Royal College of Dental Surgeons, in co-operation with the Cornwall and District Dental Society.

Among those present at the meeting, which was held in Cornwall, were Dr. Murray Purcell, Pembroke, president of the board of directors, Royal College of Dental Surgeons, and Dr. C. M. Braden, Ottawa, president of the Ontario Dental Association.

Members of the **Peterborough Dental Society** recently gathered at a dinner meeting to hear Dr. J. Z. Gillies, director of National Health Week, speak to them in favour of fluoridation.

During the **Dental Health Week** held recently in Peterborough, 17 local dentists participated in a postgraduate seminar, under the instruction of Dr. E. E. Johns, associate professor of orthodontics at the University of Toronto, and Dr. Marjorie Jackson of the department of Paedodontics at the University. Dr. Dave Mitchell, president of the Dental Public Health Committee which organized the Dental Health Week, reported that he was very pleased with the progress being made.

Halton County Dental Society held its annual meeting recently in Acton. Guest speaker was Dr. J. H. Johnson, professor of oral surgery, at the Faculty of Dentistry, University of Toronto.

At a meeting of the directors of **Oxford County Branch, Canadian Red Cross Society**, the main item on the agenda was a discussion regarding ways and means of expanding the dental health programme which has been carried on by this branch for some time. Toward this end tentative plans were made to establish a dental health clinic for children, and supplementing this, an organized programme of dental health education will be carried on to teach children the importance of caring for their teeth. Dr. O. C. Powers, MOH for Oxford County, was present at this meeting, and the programme will be carried on under his guidance.

Dr. R. C. Moore of Toronto, has been elected president of the Dental Alumni Association of the University of Toronto. Other officers are: Dr. John A. Bothwell, honorary president; Dr. George Werry, immediate past president; Dr. Ernest Rolleston, president-elect; Dr. Cecil Strachan, Dr. Harry Hutchinson, Dr. Arthur Poyntz, vice presidents; Dr. James Crawford, treasurer; Dr. Ben Gross, secretary; Dr. D. O. McIntyre, Dr. J. V. Herbert, Dr. Vic Owens, Dr. R. D. Leuty, and Dr. Harry Hunter.

Previous to the organization of the **Dental Alumni** only a few dentists were interested in the University as a whole. Only a few subscribed to the University of Toronto Monthly Magazine, and, had no connection with the University of Toronto Alumni Association until after dentistry became a faculty of the University.

Through the efforts of the late Dr. Wallace Secombe and the Board of Governors of the Ontario Dental Association, the Secretary of the O.D.A. represented Dentistry on the U. of T. Alumni, or as it existed at that time, The Federation.

After several years of such representa-

tion the Federation was asked by the Board of Governors of the University to submit nominations from the several faculties to the Board. As there was no elected body from Dentistry to suggest a name to represent Dentistry, the Secretary of the O.D.A. asked the Board to make a nomination as he was only an appointee. This the Board did without authority.

Realizing this was not a democratic way, the O.D.A. decided to appoint a committee of five (Drs. Martha Law, Tom Scott, Doug Leuty, Lee Honey and Frank Martin), with John A. Bothwell as chairman, to draw up a Constitution for a Dental Alumni and organize a meeting by interesting as many dentists as possible. After many months of preparation the committee planned the First Dental Alumni Meeting, held at the King Edward Hotel, when ninety dentists were present and the first Executive of the Dental Alumni was elected for one year. A good strong Alumni can now speak for the profession.

Resumé of Dental Alumni Organization as composed by Dr. John Bothwell.

J. E. Tilson.

The Dean of the **Faculty of Dentistry**, University of Toronto, has announced the following promotions and appointments to the Faculty Staff:

Promotions:

Dr. G. T. Mitton from Associate Professor and Head of Department of Dental Public Health, to Professor.

Dr. J. E. Moser from Associate Professor and Head of Department of Dental Radiology, to Professor.

Dr. S. A. MacGregor from Assistant Professor, to Associate Professor and Head of Department of Paedodontics.

Drs. T. N. Scott and R. L. Twible from Associates in Dentistry to Assistant Professors.

New Appointments:

Demonstrators—Drs. C. D. Beierl, K. W. Davey, P. A. Scott and T. Van de Mark.

Assistants in Dental Radiology—Drs. L. Mendels, H. Sorenson and G. E. Sparrow.

Clinical Instructor—Dr. Ian Wilson.

General News

Amendments to the **Opium and Narcotic Drug Act** were passed at the 1953-54 session of Parliament. Previously, the requirements of the Act made it essential for narcotic medication of any description to be dispensed only upon receiving a signed and dated prescription issued by a physician, dentist or veterinary surgeon. The new Regulations make provision, however, for the acceptance by pharmacists of verbal prescriptions calling for an "oral prescription narcotic product."

Nearly a quarter of a billion dollars, \$240,660,000, was spent in the United States on **oral hygiene products** in 1953, according to the trade magazine *Drug Topics*. This figure represented a \$13 million increase over 1952 and a \$37 million increase over 1951. The report said that by far the largest part of the 1953 expenditure was the \$149 million spent on dentifrices, an increase of \$9 million over 1952 and \$30 million over 1951. Other figures listed by the magazine showed that \$12 million was spent on denture adhesives and cleansers in 1953 and \$79 million on toothbrushes, dental floss, mouth washes and gargles.

Philadelphia, the United States' third largest city, on Sept. 22 began fluoridation of its water supply for its two million residents. It is the largest city in the world to initiate the programme. Nearly 24 million individuals in the United States—almost one out of every four persons served by central water systems—are now receiving water containing an optimal amount of fluorides. Inauguration of the programme in Philadelphia came nearly three years after the measure was first recommended by a special committee headed by Dr. LeRoy M. Ennis, then A.D.A. president. An eleventh-hour attempt by antifluoridationists to block the measure failed Sept. 21 when Judge Joseph L. Kun refused to grant a temporary injunction. A suit for a permanent injunction is still pending. Fluoride equipment was placed in operation in one of the city's four filter plants on Sept. 22 and was to be operating in the remaining plants within two weeks. Cost of the equipment was \$85,000. The average operating cost is expected to average about eight cents per person. Mayor Joseph Clark turned the valve which placed the programme in operation in ceremonies attended by city officials and representatives of the medical and dental professions.

In Memoriam

Gordon B. New.—Dr. Gordon B. New died at his home in Rochester, Minn., on October 29th. He was 68.

Born in Hamilton, Ontario, Dr. New received his early education in that city. He graduated from the University of Toronto in 1906, and then proceeded to study and graduate in medicine.

In 1910 Dr. New joined the surgical staff of the Mayo Clinic, and from 1917 to 1951 he was head of the department of laryngology and oral and plastic surgery. He pioneered in many of the developments in these branches of surgery.

Dr. New had been vice-president of the American College of Surgeons, and was one of three surgeons to receive special citations from the American Society of Plastic and Reconstructive Surgery since the founding of that institution some years ago. He was the first to invent a device by which speech was restored after the removal of the larynx or its functional destruction.

Surviving Dr. New is his wife, the former Ethel Bailey; two sons, Gordon of Tucson, Arizona, and Robert of Cleveland; and two grandchildren.

•
B. I. Gitterman. — Dr. B. I. Gitterman of Regina passed away in August 1954.

Born in Roumania, Dr. Gitterman came to Canada at the age of 12. He graduated from the Harvard Dental School in 1922, and began to practise in Saskatchewan the same year.

Dr. Gitterman is survived by a son, who is an intern in the Regina General Hospital.

•
Frederick Doupe McGrattan.—Dr. Frederick Doupe McGrattan of Winnipeg passed away on October 22nd, at the age of 77.

Dr. McGrattan, who was born in Uxbridge, Ont., had practised in Manitoba for the past 45 years.

He was a past master of the Masonic Lodge and a former member of St. Charles Country Club.

Dr. McGrattan is survived by a son, Thomas Frederick; a sister, Mrs. Ethel Ross; and a brother, Ellsworth.

•
Gordon Redvers Lawson.—Dr. Gordon Redvers Lawson of Minto, New Brunswick, passed away on October 27th, 1954. He was 56 years of age.

Dr. Lawson was born in North Head, Grand Manan, N.B. In 1923 he graduated from the Royal College of Dental Surgeons of Ontario, and thereafter he practised in Minto.

A veteran of the first world war, during

World War II he was second-in-command of the Second Battalion, New Brunswick Rangers.

From 1944 to 1952 Dr. Lawson represented Sudbury County in the New Brunswick legislature. He was a past master of Grand Lake Lodge; past president of the Minto Branch, Canadian Legion; a member of Fredericton Lodge, Benevolent and Protective Order of Elks; and a member of St. Michael and All Angels' Anglican Church, Newcastle Bridge.

Surviving are his wife, the former Leora Pike, St. Stephen; two daughters, Mrs. Hugh Balkam, Millton, and Enid, at home; three sons, Gordon E., M.D., of Montreal General Hospital; Paul R., of Halifax, and A. Keith; one brother, Walter C. Lawson, Minto; and one sister, Mrs. J. E. Belles, Orlando Acres, Fla.

•
Charles Murphy.—Dr. Charles Murphy of Windsor, N.S., died suddenly on Friday, October 8th.

Dr. Murphy was born in Rawdon. He graduated from the Philadelphia Dental in 1895, and practised in Windsor for over 50 years.

A member of the Masonic Order, in the spring of this year Dr. Murphy was honoured by the Grand Lodge of Masons of Nova Scotia with the presentation of a jewel marking his 50 years in freemasonry.

He is survived by a sister, Mrs. C. D. McIntosh, also of Windsor.

•
Robert Albert Sheehy.—Dr. Robert Albert Sheehy of Peterborough, Ontario, died on October 2nd, at the age of 62.

Born in Peterborough, Dr. Sheehy received his early education in that city and in Ottawa. He graduated from the Royal College of Dental Surgeons in 1916, and then enlisted in the Canadian Dental Corps, attaining the rank of Captain. At the conclusion of the war he returned to Peterborough where he practised until his death.

Dr. Sheehy was a member of the Peterborough Club, the Canadian Legion, the Knights of Columbus, and Red Patch. He played intercollegiate football with Ottawa College, the University of Toronto, and the Toronto Argonauts.

In 1944 Dr. Sheehy was a leader in Peterborough in arranging special dental care for children.

He was a member of St. Peters Cathedral, Peterborough.

Surviving are his wife, the former Mary Dwyer; two daughters, Jacqueline and Ann, of Toronto; and two sons, Richard, of Barrie, and Michael of Peterborough.

ANNOUNCEMENTS

Conventions of the Canadian Dental Association

1 9 5 5	Toronto, Ontario	May 15th — 18th
1 9 5 6	Banff, Alberta	June 3rd — 6th
1 9 5 7	Winnipeg, Manitoba	June 23rd — 27th

FUTURE EVENTS

Date	Function	Location	Officer	Address
Jan. 3, 1955	Vancouver & District Dental Society Meeting	Vancouver	Dr. D. H. Warren	3256 Cambie St., Vancouver 9, B.C.
Jan. 20	Academy of Dentistry	Toronto	Dr. J. Bevan King	1414 Danforth Ave., Toronto.
Jan. 21	Public Health Workshop on Dental Programmes in Industry	New York City	Dr. Alfred Asgis	1st District Dental Society, Hotel Statler, New York, N.Y.
Jan. 25	Annual Alpha Omega Lectureship	Toronto	Dr. H. M. Jolley	4 Madison Ave., Toronto, Ont.
June 19-23	6th Annual Berkshire Conference	Lenox, Mass.	Dr. Irving Glickman	Tufts College Dental School, 136 Harrison Ave., Boston 11, Mass.

SHORT GRADUATE COURSES

Date	Course	Location	Address
Dec. 13-17	Surgery & Prosthetic Techniques for Immediate Denture Construction	University of Montreal	Dean, Faculty of Dental Surgery, University of Montreal, P.O. Box 6128, Montreal, P.Q.
Jan. 10-15	Endodontics	as above	as above
Jan. 17-22	Anaesthesia & Oral Surgery	as above	as above
Jan. 17-22	Crown and Bridge	as above	as above
Jan. 17-22	Operative Dentistry	as above	as above
Jan. 17-22	Periodontics	as above	as above
Jan. 17-22	Prosthetics	as above	as above
Jan. 17-21	Radiodontics & Diagnosis	as above	as above
Jan. 17-21	Periodontics	University of Toronto	The Dean, Faculty of Dentistry, University of Toronto, 230 College St., Toronto 2-B, Ont.
Jan. 23-Feb. 6	Orthodontics	Temple University	Dr. Louis Herman, Director of Postgraduate Studies, Temple University Dental School, 3223 North Broad St., Philadelphia, Pa.
Jan. 26-27-28	Clinical Occlusion	as above	as above

INDEX TO VOLUME 20—1954

ACRYLIC RESINS

- McLean, John W. and Marrant, G. A. An investigation into the suitability of the auto-polymerising resins for direct inlay patterns. 551. Abstract.
Sausen, R. E., Armstrong, W. D. and Simon, W. J. Penetration of radio-calcium at margins of acrylic restorations made by compression and non-compression techniques. 84 Abstract.

AIR ABRASIVE

- White, H. D. and Peyton, F. A. Effects of air abrasive in prophylaxis. 548 Abstract.

AMALGAMS

- Mosteller, John H. An evaluation of technique for condensing amalgam restorations. 132.
Some important considerations in the mixing of silver amalgam. 494 Abstract.
Nachlin, Jacob John. A type of pain associated with the restoration of teeth with amalgam. 383 Abstract.

AMERICAN DENTAL ASSOCIATION

- Accepted Dental Remedies, 1954. (Book rev.) 93.
Phair, Philip. A.D.A. principles of prepayment plans. 272 Abstract.

ANTIBIOTICS

- Bender, I. B. and Seltzer, Samuel. The advantages and disadvantages of the use of antibiotics in endodontics. 617 Abstract.
Harris, S. C., North, W. C. and A. B. The influence of kutapressin on the human bleeding and clotting times. 271 Abstract.
Holtman, David E. The use of kutapressin in exodontics. 211 Abstract.
Jaffe, Franklin and Redish, Charles. Terramycin in oral infection. 384 Abstract.
Morin, George E. and Nathanson, Irving G. Oxtetracycline Hydrochloride (Terramycin). 30 Abstract.
Rodger, K. C. The rational use of antibiotics. 422.
Stewart, George G. An improved antibiotic-antihistamine compound for root canal medication (D.C.P.). 670. Abstract.

- ANTONI, A. A. The temporomandibular joint: its component parts: its function and its derangements. 439 Abstract.

- APPLEBAUM, Edmund and OMAN, Carl R. See Oman, Carl R.

- APPLEGATE, Oliver C. Loss of posterior occlusion. 269 Abstract.

- ARIS, Demetri D. Some aspects of root canal therapy. 88 Abstract.

- ARMSTRONG, W. D., SAUSEN, R. E. and SIMON, W. J. See Sausen, R. E.

- ASSOCIATION, The. 35, 94, 154, 219, 280, 338, 387, 443, 502, 626, 681.

AUXILIARY SERVICES

- Report of C.D.A. Committee on Auxiliary Services. 340.

BACTERIOLOGY

- MacDonald, J. B. The motile non-sporulating anaerobic rods of the oral cavity. 90 Abstract.
MacDonald, J. B., Knoll, M. L. and Sutton, R. M. Motility in a species of non-flagellated bacteria. 91 Abstract.
The production of furospiriochetal infection in guinea pigs with recombined pure cultures. 333 Abstract.

- BAGNALL, J. Stanley. Dental teaching in Canada. 603.

- BARRY, H. D. and TATTERSALL, W. R. See Tattersall, W. R.

- BAXTER, Hamilton. A complete rehabilitation programme for cleft lip and palate cases. 79.

- BEACH, H. N. National Dental Examining Board of Canada. 143, 546.

- BELANGER, L. F. Autoradiographic and histochemical studies of the entry and incorporation of sulphur in

- growing bones and teeth of the rat. 273 Abstract.
Autoradiographic visualization of in vitro exchange in teeth, bones, and other tissues, under various conditions. 333 Abstract.

- and LOTZ, W. E., VISEK, W. J. and COMAR, C. L. Autoradiographic visualization with Ca45 of normal growth of the incisor of pig and the effect of flourine feeding. 334 Abstract.

- BENDER, I. B. and SELTZER, Samuel. The advantages and disadvantages of the use of antibiotics in endodontics. 617 Abstract.

- BESIC, F. C. Caries-like enamel changes by chemical means. 89 Abstract.

- BEUBE, Frank. Periodontology (Book rev.) 93.

- BEYRON, Henry L. Characteristics of functionally optimal occlusion and principles of occlusal rehabilitation. 436 Abstract.

- BHASKAR, S. N., NUTLAY, A. G., WEINMANN, J. P. and BUDY, A. M. See Nutlay, A. G.

- BLAUSTEN, Sam. Orthodontics and child psychology. 84 Abstract.

BOOK REVIEWS

- American Dental Association. Accepted dental remedies 1954. 93.

- Beube, Frank E. Periodontology. 93.

- Brasier, Stanley. Maxillo-facial laboratory technique and facial prostheses. 442.

- Comroe, Bernard, Collins, Leon H., and Crane, Martin P. Internal medicine in dental practice. 278.

- Coolidge, Edgar D. and Hine, Maynard K. Periodontia. 680.

- Fenn, H. R. B. Clinical dental prosthetics. 154.

- Gabel, Arthur B. The American textbook of operative dentistry. 680.

- Gerson, M. The elements of dental therapeutics and anaesthesia. 386.

- Hemley, Samuel. Orthodontic theory and practice. 35.

- Klatsky, Meyer, and Fisher, Robert L. The human masticatory apparatus. 278.

- Landa, Joseph S. The dynamics of psychosomatic dentistry. 154.

- Practical full denture prosthesis. 623.

- Montgomery, George L. Pathology for students of dentistry. 34, 153.

- Moss, Aaron A. Hypnodontics, Hypnosis in dentistry. 337.

- Tattersall, W. R. and Barry, H. D. The dentist's handbook on law and ethics. 34.

- Tylman, Stanley D. (edited by). Year book of dentistry. (1953-54 series). 153.

- Wakeley, Sir Cecil (edited by). The Faber medical dictionary. 219.

- BOOS, Ralph H. Basic anatomic factors of jaw position. 549 Abstract.

- BRADLEY, T. P. and MILLER, L. W. Suggestions for guidance of dentists establishing identity of disaster victims. 328.

- BRASIER, Stanley. Maxillo-facial laboratory technique and facial prosthesis (Book rev.). 442.

- BRESLIN, WILLIAM W. Unusual infections. 430.

- BROWN, H. K., KOHLI, F. A., MacDONALD, J. B. and McLAREN, H. R. Measurement of gingivitis among school-age children in Brantford, Sarnia and Stratford, using the P-M-A index. 331 Abstract.
and McLAREN, H. R. and STEWARD, Barbara. Brantford fluoridation caries study—1954 report. 585.

- BUDOWSKY, Jack and KUTSCHER, Austin H. Exposure to x-radiation during the general practice of dentistry. 270 Abstract.

- BUDY, A. M., NUTLAY, A. G., BHASKAR, S. N. and WEINMANN, J. P. See Nutlay, A. G.

C

CANADIAN DENTAL ASSOCIATION

Convention:

- Convention reflections. 612.
Gullett, D. W. The gavel. 663.

- President's address—annual meeting. 609.
St. Andrews-by-the-Sea, September 5-8, 1954. (Ed.) 277.
Regulations governing the award of studentship. 105.
- CANCER**
Patterson, William P. The role of the dentist in the detection and diagnosis of oral malignancies. 330 Abstract.
- CARIES**
Besic, F. C. Caries-like enamel changes by chemical means. 89 Abstract.
Davies, G. N. The management of rampant dental caries. 552 Abstract.
Grainger, R. M. and Reid, D. B. W. The distribution of dental caries in children. 273 Abstract.
Jay, Phillip. Dental caries control measures. 29 Abstract.
Kesel, Robert G. Dental caries—its modern control. 88 Abstract.
Mezl, Zdenek. Histopathology of enamel caries in reflected light. 17.
Nevin, Ronald B. The diet and masticulation: their effects on diffusion and on the inception of dental caries. 831 Abstract.
Pigman, Ward, Hawkins, William, West, Harold and Gaston, Carolyn. Carious-like lesions of enamel produced in the artificial mouth. 382 Abstract.
Porter, Kathleen O., and Woods, Ella. Dental caries prevalence in three Idaho communities. 621 Abstract.
- CARTWRIGHT, Leslie H. and HARVOLD, Egil. Improved radiographic results in cephalometry through the use of high kilovoltage. 624, 2261
- CLAY, John W. Dental infection in relation to general health. 369.
- CLARK, Henry B. Treatment of fractures of the mandible with intraoral appliances. 435. Abstract.
- CLEFT LIP AND PALATE**
Baxter, Hamilton. A complete rehabilitation programme for cleft lip and palate cases. 79.
Yasny, Malcolm. A lateral cephalometric study of the skeletal pattern in cleft palate patients from 6-13 years of age. 554 Abstract.
- COHEN, Abram and DONZANTI, Albert. Two-year clinical study of caries control with high-urea ammoniated dentifrice. 669. Abstract.
- COLLE, Albert J. Some clinical applications of cephalometric analysis. 309.
- COLLINS, Leon H., COMROE, Bernard I. and CRANE, Martin P. See Comroe, B. I.
- COMAR, C. L., BELANGER, L. F., LOTZ, W. E. and VISEK, W. J. See Belanger, L. F.
- COMMITTEES AND COUNCILS REPORTS**
Auxiliary Services. 340.
Dental Education. 445.
Dental Public Health. 96.
Ethics. 558.
Health Insurance Studies. 504.
Hospital Dental Services. 389.
Housing. 388.
Legislation. 224.
Nomenclature. 283.
Publications. 37.
Public Relations. 626.
Research. 158.
Specialists and Specialization. 686.
- COMROE, Bernard I., COLLINS, Leon H., and CRANE, Martin P. Internal medicine in dental practice (Book rev.) 278.
- CONSULTATIVE ORAL AND FACIAL PAIN SERVICE**, University of California, College of Dentistry. An approach to the problem of facial pain. 1.
- COOK, E. B. and STREET, G. W. A study of dento-facial morphology and temporalis muscle activity in normal seven year old children employing cephalometric radiography and electromyography. 438 Abstract.
- COOK, S. J. National Research Council report on Committee on Dental Research. 27, 267.
- COOLEY, de Orr. A method for closure of oroanal openings. 146 Abstract.
- COOLIDGE, Edgar D. and HINE, Maynard K. Periodontia. (Book rev.) 680.
- COULOMBE, J. A. R. A serial cephalometric study of the rest position of the mandible on edentulous individuals. 536.
- COX, M. Armacost. A paediatrician views fluoridation. 199.
and JACKSON, M. See Jackson, M.
- COY, Herbert D. Gold foil in operative dentistry. 207.
- CRANE, Martin P., COMROE, Bernard I., and COLLINS, Leon H. See Comroe, B. I.
- CRAVEN, A. H. Some dental contributions to the knowledge of facial and cranial growth. 139.
- CRIPPS, Sam. Occlusal equilibration of the natural dentition. 469.
- CROUCH, John T., RUTTLE, Allan T., QUIGLEY, William, and EWAN, George F. See RUTTLE, Allan T.
- CYST**
Simmons, Hamilton E. Dentigerous cyst. 24.
- D**
- DAHL, Lilian O. and DAVIS, Beatrice B. Oral hygiene habits in young children. 615 Abstract.
- DAVIES, G. N. The management of rampant dental caries. 552 Abstract.
- DAVIS, Beatrice B. and DAHL, Lilian O. See Dahl, Lilian O.
- DEATHS**
- | | |
|----------------------------|-----|
| Atkins, Joseph Henry | 352 |
| Badgley, Frederick Nichol | 233 |
| Bell, James Wickcliffe | 567 |
| Bernfeld, Benjamin | 166 |
| Betts, Myron S. | 399 |
| Bonney, Walter | 104 |
| Borbridge, Frank G. | 293 |
| Brossard, Conrad | 233 |
| Cameron, George S. | 48 |
| Cameron, John Donald | 166 |
| Cleveland, Henry Ross | 567 |
| Croley, Walter Franklin | 104 |
| Curry, William Jameson | 49 |
| Day, Percy Lewis | 453 |
| DeMille, Albert Colborne | 233 |
| Dufour, J. W. | 233 |
| Duncan, Donald William | 352 |
| Eliot, Orville Arthur | 166 |
| Elliott, Gordon Armstrong | 104 |
| Gallagher, Patrick Joseph | 293 |
| Gee, Ewart J. | 399 |
| Gellatly, Harvey | 509 |
| Gitterman, B. I. | 695 |
| Goodwin, Whitman S. | 292 |
| Gorham, Charles Frederick | 293 |
| Green, John Carruthers | 567 |
| Gunn, Joseph William | 232 |
| Hallett, Clifford Baron | 509 |
| Hamel, Philippe | 165 |
| Hart, Oliver M. | 399 |
| Hay, John Roy | 233 |
| Hebert, J. Raoul | 166 |
| Hodgins, Herbert John | 399 |
| Howe, Edward John | 352 |
| Keller, William H. | 164 |
| Kinsman, Albert Rennie | 509 |
| Laflamme, William James | 293 |
| Landry, Antoine | 399 |
| Lapp, John Stanley | 509 |
| Larmour, Robert Ross | 293 |
| Lawson, Gordon Redvers | 695 |
| Lequyer, Leon Joseph | 292 |
| Lumsden, Joseph Howard | 635 |
| MacDonald, Daniel Lauchlin | 49 |
| MacDonald, Robert Turnbull | 164 |
| MacLaren, Wallace Lyle | 233 |
| McGratton, Frederick Doupe | 695 |

Mitchell, Wallace Barrett	567
Moore, F. C.	233
Moore, Milton L.	509
Murphy, Charles	695
Musgrove, George Johnston	635
New, Gordon B.	695
O'Shaughnessy, John Vincent	352
Parbery, Reginald Clarke	164
Peacock, Ralph M.	292
Pouliot, Origene	49
Purdy, John Henry	293
Robinson, Edgar Henry	233
Ross, John Franklin	453
Sawyer, Walter Lindsay	399
Shaw, Frank	293
Sheehy, Robert Albert	695
Shepherd, John William	399
Shute, James Fuller	635
Skinner, Thomas Angus	166
Sloane, Robert Duncan	49
Steele, Lorne David	166
Taylor, Andrew Willard	453
Travers, Henry P.	164
Walt, Charles Finlay	635
Winn, Norman Dingwall	635
Winters, Henry	232

DENTAL HISTORY

- Drake, T. G. H. Antiques of dental interest. 316.

DENTAL MEDICINE

- Kolmer, John A. Dentistry in relation to internal medicine and preventive medicine. 315 Abstract.

DENTIFRICES

- Hill, T. J. Therapeutic dentifrices. 214 Abstract.

DENTINE

- Zander, H. A. The treatment of dentine before insertion of restorations. 619. Abstract.

DENTISTRY

- Jackson, Gordon M. Advances in dentistry. 525.
Will progress be curtailed? (Ed.) 556.

DENTISTS

- Raginsky, Bernard B. The dentist as a person. 72.
McCulley, Joseph. A professional worker and his responsibilities. 377.
Peterson, Shailer. A balanced educational programme for the professional man. 210 Abstract.

- DETWILER, Samuel R. What about research? 147 Abstract.

- DE VAN, M. M. Preserving natural teeth through the use of clasps. 435 Abstract.

DIET

- Doughty, J. H., Noble, D. McCombie, F., and Schroeder, F. E. A preliminary study to determine whether a correlation exists between the dietary habits and the dentitions of elderly persons. 499. Abstract.

DISASTERS

- Bradley, T. P. and Miller, L. W. Suggestions for guidance of dentists establishing identity of disaster victims. 328.

- DOLL, Richard and HILL, A. Bradford. The mortality of doctors in relation to their smoking habits. 436 Abstract.

- DONZANTI, Albert and COHEN, Abram. See Cohen, Abram.

- DOUGHTY, J. H., NOBLE, Doris, McCOMBIE, F. and SCHROEDER, F. E. A preliminary study to determine whether a correlation exists between the dietary habits and the dentitions of elderly persons. 499 Abstract.

- DOUGLAS, Bruce L. and William. Replantation of upper anterior teeth. 212 Abstract.

- DRAKE, T. G. H. Antiques of dental interest. 316.

- DUMMETT, Clifton O. Oral tissue reactions from dilantin medication in the control of epileptic seizures. 433 Abstract.

E

ECONOMIC SECURITY

- Economic security in dental practice (Ed.) 32.
Williamson, E. L. R.
An education fund for the dentist's children. 560.
'Economic needs' versus 'policies'. 157.
Economic security—basic investment for the professional man. 627.
Hospitalization: another benefit pioneered by the C.D.A. 344.
How to calculate the 'value' of an insurance contract. 390.
Meeting special needs through insurance. 505.
More pitfalls of health and accident insurance. 284.
Some pitfalls of health and accident insurance. 223.
Taxation advantages in assurance. 689.
The economic needs of the professional man. 447.
What is the effect of the agency system? 97.
What is insurance? 38.

ECONOMIC SURVEY

- A survey of dental practice (Ed.) 277
Survey of dental practice in Canada. 1954. Part I. 683.

EDITORIALS

- A survey of dental practice. 277.
Controlled therapeutic suggestion in dentistry. 441.
Dental public health—a vital link in our chain of service. 152.
Dental representation on local Boards of Health. 218.
Dentistry for children. 385.
Economic security in dental practice. 32.
Increased training facilities—an urgent need. 622.
'No competition'. 679.
Public relations—an individual responsibility. 336.
Science or fanaticism—our nation's choice. 500.
St. Andrews-by-the-sea, September 5-8, 1954. 277.
The responsibility of a national organization in the promotion of a public health measure. 92.
Will progress be curtailed? 556.

EDUCATION, Dental

- Bagnall, J. Stanley. Dental teaching in Canada. 603.
Increased training facilities—an urgent need. (Ed.) 622.
Peterson, Shailer. A balanced educational programme for the professional man. 210 Abstract.
Report of the C.D.A. Council on Dental Education. 445.

- EDWARDS, Linden F. The edentulous mandible. 272 Abstract.

ENDODONTICS

- Aris, Demetri D. Some aspects of root canal therapy. 88 Abstract.
Bender, I. B. and Seltzer, Samuel. The advantages and disadvantages of the use of antibiotics in endodontics. 617 Abstract.
Lawrence, K. E. Vital pulpotomy. 31 Abstract.
Merrell, J. H. Bleaching of discoloured pulpless teeth. 380.
Ostrander, F. D. Some basic requirements of successful root canal therapy. 183.

ETHICS

- Report of C.D.A. Committee on Ethics. 558.
EWAN, George E., RUTTLE, Allan T., QUIGLEY, William and CROUCH, John T. See Ruttle, Allan T.

F

FACIAL GROWTH

- Craven, A. H. Some dental contributions to the knowledge of facial and cranial growth. 139.

FACIAL PAIN

- Report from Consultative Oral and Facial Pain Service, University of California. An approach to the problem of facial pain. 1.

- FARBER, Eugene H. A rational approach to the treatment of the mixed dentition. 551 Abstract.

- FENN, H. R. B. Clinical dental prosthetics. (Book rev.) 154.

FINGER SUCKING

- Ruttle, Allan T., Quigley, William, Crouch, John T.

- and Ewan, George S. A serial study of the effects of finger sucking. 87 Abstract.
- Shanks, H. W. A study of the relation between the incidence of sucking habits, intelligence quotient and manual dexterity in children. 555 Abstract.
- FISK, G. V. Recent trends in orthodontics. 65.
- FISHER, Robert L. and KLATSKY, Meyer. See Klatsky, Meyer.
- FLUORIDES**
- Brown, H. K., McLaren, H. R., Stewart, Barbara. Brantford fluoridation caries study—1954 Report. 585.
- Cox, M. Armacost. A paediatrician views fluoridation. 199.
- Galagan, Donald J. Climate and controlled fluoridation. 86 Abstract.
- Jackson, M. and Cox, M. A. Topical application of sodium fluoride. 439 Abstract.
- McCauley, H. Berton, and McClure, F. J. Effect of fluoride in drinking water. 494 Abstract.
- Miller, R. J. An evaluation of dental caries control by fluorides. 658.
- Sava, Bhim Sen, Noyes, Judd and Suher, Theodore. Effects of air-borne fluorides on children living on Saavie Island. 497 Abstract.
- Science or fanaticism—our nation's choice (Ed.) 500.
- Stones, H. H. Fluoridation of domestic water supplies in the control of dental caries. 383 Abstract.
- The responsibility of a national organization in the promotion of a public health measure. (Ed.) 92.
- FORSCHER, B. K. and HINIKER, J. J. See Hiniker, J. J.
- FOSDICK, L. S., HINE, M. Kiplinger, and WACHTL, Carl. See Hine, M. K.
- FRACTURES**
- Clark, Henry B. Treatment of fractures of the mandible with intra-oral appliances. 435 Abstract.
- Lubitz, Erwin C. Fractures of dental origin. 86 Abstract.
- FREELAND, Henry L. Dental surgery as related to hospital services. 264.
- G**
- GABEL, Arthur B. The American textbook of operative dentistry. (Book rev.) 680.
- GALAGAN, Donald J. Climate and controlled fluoridation. 86 Abstract.
- GASTON, Carolyn, PIGMAN, Ward, HAWKINS, William and WEST, Harold. See Pigman, Ward.
- GERSON, M. The elements of dental therapeutics and anaesthesia. (Book rev.) 386.
- GINGIVA**
- Brown, H. K., Kohli, F. A., MacDonald, J. B. and McLaren, H. R. Measurement in gingivitis among school age children in Brantford, Sarnia and Stratford, using the P-M-A index. 331 Abstract.
- Grindly, Mohamed S. Gingival condition in pregnant women. 432 Abstract.
- Neilson, J. W. A gingivectomy for the general practitioner. 249.
- GRAINGER, R. M. and REID, D. B. W. The distribution of dental caries in children. 273 Abstract.
- GRANGER, Ernest R. Functional relations of the stomatognathic system. 437 Abstract.
- GREULICH, Richard C. and LEBLOND, C. P. Radioautographic visualization of the formation and fate of the organic matrix of dentin. 274 Abstract.
- GRINDLY, Mohamed S. Gingival condition in pregnant women. 432 Abstract.
- GULLETT, D. W. The gavel. 663.
- H**
- HARRIS, S. C., NORTH, W. C. and A. B. The influence of kutapressin on the human bleeding and clotting times. 271 Abstract.
- HARVOLD, Egil and CARTWRIGHT, Leslie J. See Cartwright, Leslie J.
- HAWKINS, William, PIGMAN, Ward, WEST, Harold and GASTON, Carolyn. See Pigman, Ward.
- HEALTH INSURANCE STUDIES**
- Report of C.D.A. Committee on Health Insurance Studies. 504.
- HEMLEY, Samuel. Orthodontic theory and practice. (Book rev.) 35.
- HILL, A. Bradford, and DOLL, Richard. See Doll, Richard.
- HILL, Thomas J. Therapeutic dentifrices. 214 Abstract.
- HINE, Maynard K. and COOLIDGE, Edgar D. See Coolidge, Edgar D.
- HINE, M. Kiplinger, WACHTL, CARL, and FOSDICK, L. S. Some observations on the cleansing effect of nylon and bristle toothbrushes. 619 Abstract.
- HINIKER, J. J. and FORSCHER, B. K. The effect of toothbrush type on gingival health. 146 Abstract.
- HOLTMAN, David E. The use of kutapressin in exodontics. 211 Abstract.
- HOSPITAL SERVICES**
- Freeland, Henry L. Dental surgery as related to hospital services. 264.
- Report on C.D.A. Committee on Hospital Dental Services. 389.
- HOUSING**
- Report on C.D.A. Committee on Housing. 388.
- HUNTER, H. A. and NIKIFORUK, Gordon. Ameloblastoma in a three-year old male. 215 Abstract.
- J**
- JACKSON, Gordon M. Advances in dentistry. 525.
- JACKSON, M. and COX, M. A. Topical application of sodium fluoride. 439. Abstract.
- JAFFE, Franklin B. and REDISH, Charles H. Terramycin in oral infections. 384. Abstract.
- JAY, Phillip. Dental caries control measures. 29 Abstract.
- JENKINS, D. H. A study of dentofacial anatomy in normal and abnormal individuals employing lateral cephalometric radiography. 533 Abstract.
- JORDAN, Luzerne G. Prominent rugae and glossy tongue surface. 213 Abstract.
- K**
- KELLY, Col. E. K. Principles of partial denture construction. 29. Abstract.
- KESEL, Robert G. Dental caries—its modern control. 88 Abstract.
- KIMBALL, Horton D. Factors to be considered in the control and elimination of chronic tissue soreness beneath dentures. 615 Abstract.
- KLATSKY, Meyer and FISHER, Robert L. The human masticatory apparatus. (Book Rev.) 278.
- KNOLL, M. L., MacDONALD, J. B. and SUTTON, R. M. See MacDonald, J. B.
- KOHLI, F. A., BROWN, H. K., MacDONALD, J. B. and McLAREN, H. R. See Brown, H. K.
- KUTSCHER, Austin H. and BUDOWSKY, Jack. See Budowsky, Jack.
- L**
- LANDA, Joseph S. The dynamics of psychosomatic dentistry. (Book rev.) 154.
- Practical full denture prosthesis (Book rev.) 623.
- LAWRENCE, K. E. Vital pulpotomy. 31 Abstract.
- LEBLOND, C. P. and GREULICH, Richard C. See Greulich, Richard C.
- LEGISLATION**
- Report of C.D.A. Committee on Legislation. 224.
- LIBRARY.** Additions to. 36, 95, 156, 222, 279, 338, 442, 501, 557, 626, 682.
- LINDBLOM, Gosta. Disorders of the temporomandibular joint. 496 Abstract.
- LINGHORNE, W. J. Studies in the regeneration and re-attachment of the supporting structures of the teeth. 620, 672. Abstract.

- LISTIAK, Daniel A. Accuracy and impression procedure using the alginate materials. 384 Abstract.
- LOTZ, W. E., VISEK, W. J., COMAR, C. L. and BELANGER, L. F. See Belanger, L. F.
- LUBIT, Erwin C. Fractures of dental origin. 86 Abstract.

M

- MACAPANPAN, Luz C. and WEINMANN, Joseph P. The influence of injury to the periodontal membrane on the spread of gingival inflammation. 332 Abstract.
- MacDONALD, J. B. The motile non-sporulating anaerobic rods of the oral cavity. 90 Abstract.
- and BROW, H. K., KOHLI, F. A. and McLAREN, H. R. Measurement of gingivitis among school-age children in Brantford, Sarnia and Stratford using the P-M-A index. 331 Abstract.
- and McLAREN, H. R. and STEWARD, Barbara. Brantford fluoridation caries study—1954 report. 585.

MANDIBLE

- Edwards, Linden F. The edentulous mandible. 272 Abstract.
- McCAULEY, H. Berjon and McCCLURE, F. J. Effect of fluoride in drinking water. 494 Abstract.
- McCCLURE, F. J. and McCAULEY, H. B. See McCauley, H. B.
- McCOMBIE, F., DOUGHTY, J. H., NOBLE, Doris, and SCHROEDER, F. E. See Doughty, J. H.
- McCULLEY, Joseph. A professional worker and his responsibilities. 377.
- McINTOSH, W. G. Gingival and periodontal disease in children. 12.
- McCLAREN, H. R., BROWN, H. K., KOHLI, F. A. and MacDONALD, J. B. See Brown, H. K.
- McLEAN, John and MORRANT, G. A. An investigation into the suitability of the auto-polymerising resins for direct inlay patterns. 551 Abstract.
- McNEEL, John D. Union's prepayment plan includes dental care. 212 Abstract.
- MEAD, Sterling G., SELFRIDGE, George D. and SAMUELS, Homer S. An improved intracoronar method of intermaxillary fixation. 618 Abstract.
- MEKLAS, John F. Dangers of scattered radiation in dental practice. 548 Abstract.
- MERRELL, J. H. Bleaching of discoloured pulpless teeth. 380.
- MEZL, Zdenek. Histopathology of enamel caries in reflected light. 17.
- MILLER, L. W. and BRADLEY, T. P. See Bradley, T. P.
- MILLER, R. J. An evaluation of dental caries control by fluorides. 658.
- MONTGOMERY, George L. Pathology for students of dentistry. (Book rev.) 34, 153.
- MORIN, G. E. and NATHANSON, Irving G. Oxytetracycline Hydrochloride (Terramycin). 30 Abstract.
- MORRANT, G. A. and McLEAN, John W. See McLean, John W.
- MOSS, Aaron A. Hypnodontics, hypnosis in dentistry. 337 (Book rev.).
- MOSTELLER, John H. An evaluation of technique for condensing amalgam restorations. 132.
- Some important considerations in the mixing of silver amalgam. 494 Abstract.

N

- NACHLIN, Jacob John. A type of pain associated with the restoration of teeth with amalgam. 383 Abstract.
- NATHANSON, Irving G. and MORIN, G. E. See Morin, G. E.
- NATIONAL DENTAL EXAMINING BOARD OF CANADA
- Beach, H. N. 143, 546.
- Examination schedule. 547.
- Regulations for candidates. 167.
- Results of examinations. 566.

NATIONAL RESEARCH COUNCIL

- Cook, S. J. N.R.C. report on Associate Committee on Dental Research. 27, 267.
- NEILSON, J. W. A gingivectomy for the general practitioner. 249.
- NEVIN, Ronald B. The diet and mastication; their effects on diffusion and on the inception of dental caries. 381 Abstract.
- NEWBY, C. D. Hypertrophy. 489.
- NIKIFORUK, Gordon and SREEBNY, Leo. Demineralization of hard tissues by organic chelating agents at neutral pH. 215 Abstract.
- and HUNTER, H. A. Ameloblastoma in a three year old male. 215 Abstract.
- Staining reactions following demineralization of hard tissues by chelating and other decalcifying agents. 216 Abstract.
- NOBLE, Doris, DOUGHTY, J. H., McCOMBIE, F. and SCHROEDER, F. E. See Doughty, J. H.
- NOMENCLATURE
- Report of C.D.A. Committee on Nomenclature. 283.
- NORTH, W. C. and A. B., and HARRIS, S. C. See Harris, S. C.
- NOYES, Harold Judd, SAVARA, Bhim Sen, and SUHER, Theodore. See Savara, Bhim Sen.
- NUTLAY, A. G., BHASKAR, S. N., WEINMANN, J. P. and BUDY, A. M. The effect of estrogen on the gingiva and alveolar bone of molars in rats and mice. 498 Abstract.

O

OCCLUSION

- Applegate, Oliver C. Loss of posterior occlusion. 269 Abstract.
- Beyron, Henry L. Characteristics of functionally optimal occlusion and principles of occlusal rehabilitation. 436 Abstract.
- Boos, Ralph H. Basic anatomic factors of jaw position. 549 Abstract.
- Coulombe, Joseph A. R. A serial cephalometric study of the rest position of the mandible on edentulous individuals. 536.
- Cripps, Sam. Occlusal equilibration of the natural dentition. 469.
- Orban, Balint. Biologic basis for correcting occlusal disharmonies. 668. Abstract.
- Rhoads, John E. Occlusal harmony—a consideration in periodontal treatment. 148 Abstract.
- Winslow, Max B. The preventive role of occlusal balancing of the natural dentition. 269 Abstract.
- OMAN, Carl R. and APPLEBAUM, Edmund. Ultrasonic cavity preparation. 492 Abstract.

OPERATIVE DENTISTRY

- Coy, Herbert D. Gold foil in operative dentistry. 207.
- McLean, John W. and Morrart, G. A. An investigation into the suitability of the auto-polymerising resins for direct inlay patterns. 551 Abstract.
- Oman, Carl R. and Applebaum, Edmund. Ultrasonic cavity preparation. 492 Abstract.
- Sausen, R. E., Armstrong, W. D. and Simon, W. J. Penetration of radio-calcium at margins of acrylic restorations made by compression and non-compression techniques. 84 Abstract.

ORAL HYGIENE

- Dahl, Lilian O. and Davis, Beatrice B. Oral hygiene habits of young children. 615 Abstract.

ORAL SURGERY

- Breslin, William W. Unusual impactions. 430.
- Cooley, de Orr. A method for closure of oroantral openings. 146 Abstract.
- Douglas, Bruce L. and William. Replantation of upper anterior teeth. 212 Abstract.
- Freeland, Henry L. Dental surgery as related to hospital services. 264.
- Harris, S. C., North, W. C. and A. B. The influence of kutapressin on the human bleeding and clotting times. 271 Abstract.
- Holtman, David E. The use of kutapressin in exodontics. 211 Abstract.

- Mead, Sterling G., Selfridge, George D. and Samuels, Homer S. An improved intracoronal method of intermaxillary fixation. 618 Abstract.
 Newby, C. D. Hypertrophy. 489.
 Rondeau, Paul L. Rhinolith: report of a case. 543.
 Royer, Quentin. General anaesthesia for oral surgery. 434 Abstract.

ORBAN, Balint. Biologic basis for correcting occlusal disharmonies. 668. Abstract.

ORTHODONTICS

- Blausten, Sam. Orthodontics and child psychology. 84 Abstract.
 Colle, Albert J. Some clinical applications of cephalometric analysis. 309.
 Cook, E. B. and Street, G. W. A study of dentofacial morphology and temporalis muscle activity in normal seven year old children employing cephalometric radiography and electro-myography. 438 Abstract.
 Farber, Eugene H. A rational approach to the treatment of the mixed dentition. 551 Abstract.
 Fisk, G. V. Recent trends in orthodontics. 65.
 Jenkins, D. H. A study of dentofacial anatomy in normal and abnormal individuals employing lateral cephalometric radiography. 553 Abstract.
 Ruttle, Allan T., Quigley, William, Crouch, John T. and Ewan, George. A serial study of the effects of finger-sucking. 87 Abstract.
 Shultis, W. K. Occlusion in preventive dentistry. 653.
 White, Robert B. Some viewpoints on extraction. 496 Abstract.
 Yasny, Malcolm. A lateral cephalometric study of the skeletal pattern in cleft palate patients from 6-13 years of age. 554 Abstract.

OSTRANDER, F. D. Some basic requirements of successful root canal therapy. 183.

P

PAEDODONTICS

- Dentistry for children (Ed.) 385.
 Reid, J. Frederick. Therapeutic approach to child management in dentistry. 205.

PARTIAL DENTURES

- Kelly, Col. E. K. Principles of partial denture construction. 29 Abstract.
 Schmidt, A. H. Planning and designing removable partial dentures. 415.

PATTERSON, William R. The role of the dentist in the detection and diagnosis of oral malignancies. 330 Abstract.

PAYNTER, K. J. The effect of propyl thiouracil on the development of molar teeth of rats. 150 Abstract.

PERIODONTICS

- Brown, H. K., Kohli, F. A., MacDonald, J. B., McLaren, H. R. Measurement of gingivitis among school-age children in Brantford, Sarnia and Stratford, using the P-M-A index. 331 Abstract.
 Cripps, Sam. Occlusal equilibration of the natural dentition. 469.
 Drummett, Clifton O. Oral tissue reactions from dilantin medication in the control of epileptic seizures. 433 Abstract.
 Grindly, Mohamed S. Gingival conditions in pregnant women. 432 Abstract.
 Hinkler, J. J. and Forscher, B. K. The effect of toothbrush type on gingival health. 146 Abstract.
 Macapanpan, Luz C. and Weinmann, Joseph P. The influence of injury to the periodontal membrane on the spread of gingival inflammation. 332 Abstract.
 McIntosh, W. G. Gingival and periodontal disease in children. 12.
 Neilson, J. W. A gingivectomy for the general practitioner. 249.
 Rhoads, John E. Occlusal harmony—a consideration in periodontal treatment. 148 Abstract.
 Scott, William R. Selective spot grinding. 372.
 Winslow, Max B. The preventive role of occlusal balancing of the natural dentition. 269 Abstract.
 Wolfsohn, Bertram L. The role of hydrocortisone in the control of apical periodontitis. 550 Abstract.

PETERSON, Shailer. A balanced educational programme for the professional man. 210 Abstract.

PEYTON, F. A. and WHITE, H. D. See White, H. D. PHAIR, Philip. A.D.A. principles of prepayment plans. 272 Abstract.

PHILLIPS, R. W. Review of impression materials. 667. Abstract.

PIGMAN, Ward, HAWKINS, William, WEST, Harold, and GASTON, Carolyn. Carious-like lesions of enamel produced in the artificial mouth. 382 Abstract.

POOL, M. L. and SPANGENBERG, Harry D. See Spangenberg, Harry D.

PORTER, Kathleen O. and WOODS, Ella. Dental caries prevalence in three Idaho communities. 621 Abstract.

PREPAYMENT PLANS

- McNeel, John D. Union's prepayment plan includes dental care. 212 Abstract.
 Phair, Philip. A.D.A. principles of prepayment plans. 272 Abstract.

PREVENTIVE DENTISTRY

- Cohen, Abram and Donzanti, Albert. Two-year clinical study of caries control with high-urea ammoniated dentifrice. 669. Abstract.
 Shintani, John. Preventive dentistry in children and its relation with diet. 121.

PROFESSIONAL RELATIONS

- "No competition." (Ed.) 679.

PROSTHETIC DENTISTRY

- Appleby, Ralph Carson. Requirements of an acceptable impression. 433 Abstract.
 de Van, M. M. Preserving natural teeth through the use of clasps. 435 Abstract.
 Granger, Ernest R. Functional relations of the stomatognathic system. 437 Abstract.
 Jordan, Luzerne G. Prominent rugae and glossy tongue surface. 213 Abstract.
 Kimball, Horton D. Factors to be considered in the control and elimination of chronic tissue soreness beneath dentures. 615 Abstract.
 Listiak, Daniel A. Accuracy and impression procedure using the alginate materials. 384 Abstract.
 Phillips, R. W. Review of impression materials. 667. Abstract.
 Steinmann, R. R. Warpage produced by soldering with dental solders and gold alloys. 437 Abstract.

PROVINCES, The. 40, 98, 160, 225, 286, 346, 391, 449, 507, 562, 629, 690.

PSYCHOSOMATIC DENTISTRY

- Controlled therapeutic suggestion in dentistry (Ed.) 441.
 Raginsky, Bernard. Psychosomatic dentistry. 479.

PUBLICATIONS

- Report of C.D.A. Committee on Publications. 37.

PUBLIC HEALTH

- Dental public health—a vital link in our chain of service. (Ed.) 152.
 Dental representation on local Boards of Health (Ed.) 218.
 Report of C.D.A. Committee on Dental Public Health. 96.
 Sturgeon, L. W. C. The medical officer looks at the dental public health programme. 85 Abstract.
 The responsibility of a national organization in the promotion of a public health measure (Ed.) 92.

PUBLIC RELATIONS

- Public relations—an individual responsibility (Ed.) 336.
 Report of C.D.A. Committee on Public Relations. 626.

Q

QUIGLEY, William, RUTTLE, Allan T., CROUCH, John T., and EWAN, George. See Ruttle, Allan T.

R

RAGINSKY, Bernard B. The dentist as a person. 72. Psychosomatic dentistry. 479.

REDISH, Charles H. and JAFFE, Franklin B. See Jaffe, Franklin B.

REID, D. B. W. and GRAINGER, R. M. See Grainger, R. M.

REID, J. Frederick. Therapeutic approach to child management in dentistry. 205.

RESEARCH

Antoni, A. A. The temporomandibular joint: its component parts: its function and its derangements. 439 Abstract.

Belanger, L. F. Autoradiographic and histochemical studies of the entry and incorporation of sulphur in growing bones and teeth of the rat. 273 Abstract. Autoradiographic visualization of in vitro exchange in teeth, bones and other tissues, under various conditions. 333 Abstract.

and Lotz, W. E., Visek, W. J. and Comar, C. L. Autoradiographic visualization with Ca45 of normal growth of the incisor of pig and the effect of fluorine feeding. 334 Abstract.

Cook, E. B. and Street, G. W. A study of dentofacial morphology and temporalis muscle activity in normal seven year old children, employing cephalometric radiography and electromyography. 438 abstract.

Detwiler, Samuel R. What about research? 147 Abstract.

Doughty, J. H., Noble, Doris, McCombie, F. and Schroeder, F. E. A preliminary study to determine whether a correlation exists between the dietary habits and the dentition of elderly persons. 499 Abstract.

Grainger, R. M. and Reid, D. B. W. The distribution of dental caries in children. 273 Abstract.

Greulich, Richard C. and Leblond, C. P. Radioautographic visualization of the formation and fate of the organic matrix of dentin. 274 Abstract.

Hunter, H. A. and Nikiforuk, Gordon. Ameloblastoma in a three year old male. 215 Abstract.

Staining reactions following demineralization of hard tissues by chelating and other decalcifying agents. 216 Abstract.

Jackson, M. and Cox, M. A. Topical application of sodium fluoride. 439 Abstract.

Jenkins, D. H. A study of dentofacial anatomy in normal and abnormal individuals employing lateral cephalometric radiography. 553 Abstract.

Linghorne, W. J. Studies in the regeneration and reattachment of the supporting structures of the teeth. 620, 672. Abstract.

MacDonald, J. B. The motile non-sporulating anaerobic rods of the oral cavity. 90 Abstract.

and Sutton, R. M. and Knoll, M. L. Motility in a species of non-flagellated bacteria. 91 Abstract.

The production of fusospirochetal infections in guinea pigs with recombined pure cultures. 333 Abstract.

Nikiforuk, Gordon and Sreebny, Leo. Demineralization of hard tissues by organic chelating agents at neutral pH. 215 Abstract.

Nutlay, A. G., Bhaskar, S. N., Weinmann, J. P. and Budy, A. M. The effect of estrogen on the gingiva and alveolar bone of molars in rats and mice. 498 Abstract.

Paynter, K. J. The effect of propylthiouracil on the development of molar teeth of rats. 150 Abstract.

Porter, Kathleen O. and Woods, Ella. Dental caries prevalence in three Idaho communities. 621 Abstract. Report of the C.D.A. Research Committee. 158.

Shanks, H. W. A study of the relation between the incidence of sucking habits, intelligence quotient and manual dexterity in children. 555 Abstract.

Thompson, Henry. Sterilization of sharp instruments using a boiling emulsion of AC-10 oil. 499 Abstract. Yasny, Malcolm. A lateral cephalometric study of skeletal pattern in cleft palate patients from 6 to 13 years of age. 554 Abstract.

RHOADS, John E. Occlusal harmony—a consideration in periodontal treatment. 148 Abstract.

RODGER, K. C. The rational use of antibiotics. 422.

ROENTGENOLOGY

Budowsky, Jack and Kutscher, Austin H. Exposure to x-radiation during the general practice of dentistry. 270 Abstract.

Cartwright, Leslie J. and Harvold, Egil. Improved radiographic results in cephalometry through the use of high kilovoltage. 261.

Meklas, John F. Dangers of scattered radiation in dental practice. 548 Abstract.

Spangenberg, Harry D. Jr., and Pool, M. L. Production of roentgenograms by x-radiation obtained from radioactive x-ray emitters. 87 Abstract.

RONDEAU, Paul L. Rhinoloth—report of a case. 543.

ROYAL CANADIAN DENTAL CORPS. 39, 98, 159, 222, 285, 345, 387, 449, 504, 565, 628, 687.

ROYER, R. Quentin. General anaesthesia for oral surgery. 434 Abstract.

RUTTLE, Allan T., QUIGLEY, William, CROUCH, John T. and EWAN, George. A serial study of the effects of finger-sucking. 87 Abstract.

S

SAMUELS, Homer S., MEAD, Sterling and SELFIDGE, George D. See Mead, Sterling.

SAUSEN, R. E., ARMSTRONG, W. D. and SIMON, W. J. Penetration of radiocalcium at margins of acrylic restorations made by compression and non-compression techniques. 84 Abstract.

SAVARA, Bhim Sen, NOYES, Harold Judd, and SUHER, Theodore. Effects of air-borne fluorides on children living on Savic Island. 497 Abstract.

SCHMIDT, Col. A. H. Planning and designing removable partial dentures. 415.

SCHROEDER, F. E., DOUGHTY, J. H., NOBLE, Doris, and MCCOMBIE, F. See Doughty, J. H.

SCOTT, William R. Selective spot grinding. 372.

SELFIDGE, George D., MEAD, Sterling, and SAMUELS, Homer S. See Mead, Sterling.

SELTZER, Samuel and Bender, I. B. See Bender, I. B.

SHANKS, H. W. A study of the relation between the incidence of sucking habits, intelligence quotient and manual dexterity in children. 555 Abstract.

SHINTANI, John. Preventive dentistry in children and its relation with diet. 121.

SHULTIS, W. K. Occlusion in preventive dentistry. 653.

SIMMONS, Hamilton E. Dentigerous cyst. 24.

SIMON, W. J., SAUSEN, R. E. and ARMSTRONG, W. D. See Sausen, R. E.

SMOKING HABITS

Doll, Richard and Hill, A. Bradford. The mortality of doctors in relation to their smoking habits. 436 Abstract.

SPANGENBERG, Harry D. and POOL, M. L. Production of roentgenograms by x-ray radiations obtained from radioactive x-ray emitters. 87 Abstract.

SREEBNY, Leo and NIKIFORUK, Gordon. See Nikiforuk, Gordon.

STEINMAN, R. R. Warpage produced by soldering with dental solders and gold alloys. 437 Abstract.

STEWART, Barbara, BROWN, H. K. and McLAREN, H. R. See Brown, H. K.

STEWART, George G. An improved antibiotic-antihistamine compound for root canal medication (D.C.P.). 670. Abstract.

STONES, H. H. Fluoridation of domestic water supplies in the control of dental caries. 383 Abstract.

STREET, G. W. and COOK, E. B. See Cook, E. B.

STURGEON, L. W. C. The medical officer looks at the dental public health programme. 85 Abstract.

SUHER, Theodore, SAVARA, Bhim Sen, and NOYES, Harold Judd. See Savara, Bhim Sen.

SUTTON, R. M., MacDONALD, J. B. and KNOLL, R. M. See MacDonald, J. B.

T

TATTERSALL, W. R. and BARRY, H. D. The dentist's handbook on law and ethics (Book rev.) 34.

TEMPOROMANDIBULAR JOINT

Antoni, A. A. The temporomandibular joint: its

component parts: its function and its derangements. 439 Abstract.

Lindblom, Gosta. Disorders of the temporomandibular joint. 496 Abstract.

Vaughan, Homer Cree. Temporomandibular joint pain. 616 Abstract.

THOMPSON, Henry. Sterilization of sharp instruments using a boiling emulsion of AC-10 oil. 499 Abstract.

TOOTHBRUSHES

Hine, M. Kiplinger, Wachtl, Carl, and Fosdick, L. S. Some observations on the cleansing effect of nylon and bristle toothbrushes. 619 Abstract.

Hiniker, J. J. and Forscher, B. K. The effect of toothbrush type on gingival health. 146 Abstract.

TYLMAN, Stanley. Year book of dentistry, 1953-54. (Book rev.), 153.

V

VAUGHAN, Homer Cree. Temporomandibular joint pain. 616 Abstract.

WISEK, W. J., BELANGER, L. F., LOTZ, W. E. and COMAR, C. L. See Belanger, L. F.

W

WACHTL, Carl, HINE, M. K., and FOSDICK, L. S. See Hine, M. K.

WAKELEY, Sir Cecil (Edited by). The Faber Medical Dictionary (Book rev.) 219.

WEINMANN, J. P., NUTLAY, A. G., BHASKAR, S. N. and BUDY, A. M. See Nutlay, A. G. and MACAPANPAN, Luz C. See Macapanpan, Luz C.

WEST, Harold, PIGMAN, Ward, HAWKINS, William, and GASTON, Carolyn. See Pigman, Ward.

WHITE, H. D. and PEYTON, F. A. Effects of air abrasive in prophylaxis. 548 Abstract.

WHITE, Robert H. Some viewpoints on extraction. 496 Abstract.

WINSLOW, Max B. The preventive role of occlusal balancing of the natural dentition. 269 Abstract.

WOLFSOHN, Bertram L. The role of hydrocortisone in the control of apical periodontitis. 550 Abstract.

WOODS, Ella and PORTER, Kathleen O. See Porter, Kathleen O.

Y

YASNY, Malcolm. A lateral cephalometric study of the skeletal pattern in cleft palate patients from 6 to 13 years of age. 554 Abstract.

Z

ZANDER, H. A. The treatment of dentine before insertion of restorations. 618 Abstract.

Journal

DE L'ASSOCIATION DENTAIRE CANADIENNE

Deux dentiers à quatre ans!

par Adélarde Leblanc, D.D.S., Lachine*

Ce titre n'a pas été choisi au hasard: il est l'histoire d'un patient traité à l'hôpital Children's Memorial, Chicago, au cours de l'année 1951.

Cette histoire peut sembler un chef-d'oeuvre de prothèse: n'avait-on pas rendu cet enfant capable de se nourrir, de s'exprimer avec aisance et de paraître assez naturel? Elle n'en reste pas moins un échec complet: si on avait amené plus tôt ce jeune à la clinique, la tragédie de sa bouche, dans ses implications, aurait pu être évitée; la cause en fut la carie dentaire, une maladie qu'on peut prévenir ou tout au moins contrôler (1).

Activité de la carie

La carie dentaire est une affection des tissus durs de la dent. Elle est causée par des acides qui se forment dans toutes les bouches, à des rythmes différents. Ces variations peuvent s'observer chez le

même individu. Malgré cela, toutes les dents viendraient à se décalcifier, si rien ne les protégeait. Chaque bouche toutefois possède, à un plus ou moins grand degré, le pouvoir de neutraliser ou d'éliminer les acides que l'on y rencontre.

Ainsi nous voyons que l'activité de la carie dentaire dépend de deux facteurs variables: le rythme de formation d'acides et celui de leur neutralisation et élimination. (2) Bien des facteurs contrôlent ces deux facteurs mais, en définitive, ils sont à la base du processus. Ce fait suggère une classification (2):

On trouverait, dans la première catégorie, les patients chez qui le rythme de formation d'acides et celui de leur neutralisation et élimination sont rapides. Pour la plupart, nous sommes de ce nombre avec notre occlusion, notre diète, notre salive et notre consommation de sucre qui se situent dans la moyenne.

La deuxième catégorie comprendrait ceux chez qui le rythme de formation d'acides est rapide, mais celui de leur neutralisation et élimination lent. Une

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poignée de personnes y appartiennent: elles consomment généralement beaucoup de sucre, leur salive est déficiente, leur diète anormale et leur bouche en très mauvais état. Le succès d'un traitement repose presque entièrement dans ces cas, sur l'étroite coopération du patient ou de ceux qui en sont responsables.

Il y aurait, dans la troisième catégorie, les individus chez qui le rythme de formation d'acides est lent et celui de leur neutralisation et élimination rapide. Ils mangeront parfois beaucoup de sucre, ne s'occuperont pas de leur bouche et ne feront pas ou peu de carie. Généralement toutefois, leur diète sera riche en fruits et légumes frais, leur occlusion sera parfaite et ils posséderont beaucoup de salive riche en pouvoir tampon.

La quatrième catégorie serait composée de ceux chez qui le rythme de formation d'acides et celui de leur neutralisation et

Ne serait-ce pas le cas des Européens de Schour (3)?

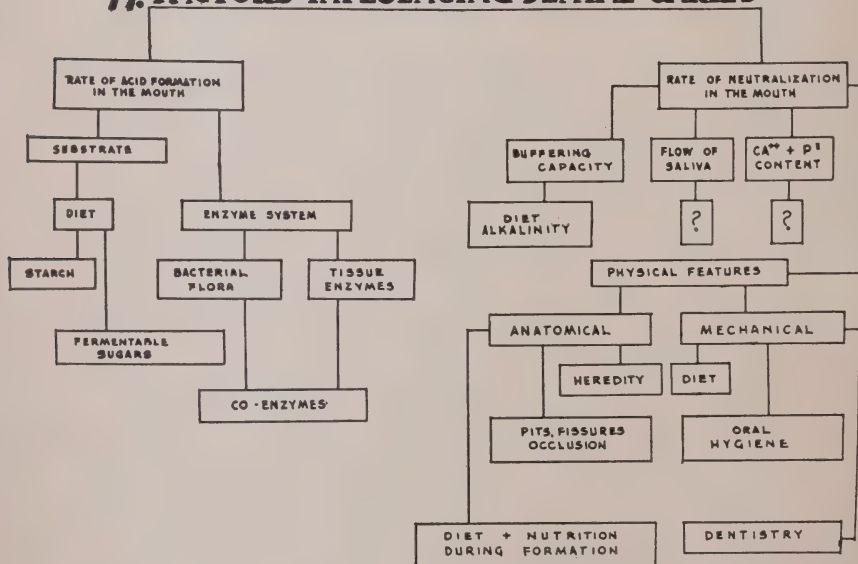
Mécanisme de formation d'acides:

Ainsi l'image du mécanisme de la carie s'éclaircit. Il reste bien des problèmes, car nos deux facteurs variables dépendent de tant de circonstances. Souvent, il n'est pas facile de les déterminer; il arrivera même qu'ils le soient, mais on ne peut pas les apprécier quantitativement. Toutefois, nous avons des précisions et les voici, dans un graphique de Fosdick (4) que nous commenterons:

Il y a deux conditions essentielles à la formation d'acides: la présence d'un substrat et celle d'un système enzymatique approprié.

Après un repas, certains aliments séjournent dans la bouche. S'il peuvent donner naissance à un acide, ils formeront

FACTORS INFLUENCING DENTAL CARIES



élimination sont lents. Ces gens ne consommeraient pas de sucre raffiné, leur diète serait déficiente en vitamines. Ils n'auraient pas besoin de protection, puisqu'aucun acide ne pourrait se former.

le substrat. Parmi eux se rencontrent surtout les monosaccharides et les disaccharides (1, 5). L'hydrolyse des amidons est un phénomène un peu long pour que ces corps jouent un rôle important

dans la carie dentaire: *"At the present time, most of the evidence indicates that free sugar is the predominant source of acid and that ingested starches do not influence the susceptibility to decay"*; disaient Fosdick, Fancher et Champaigne, en 1941 (6). Après une analyse de la diète de 206 patients dont les uns faisaient beaucoup de carie et les autres pas, Becks concluait, en 1942: *"The only difference in the dietary intake of the two groups was in consumption of carbohydrates, especially in regard to refined sugars"* (7).

On peut, par ailleurs, manger beaucoup de sucre et n'avoir qu'une incidence très basse de carie. C'est que seuls ceux qui séjournent dans la bouche peuvent servir à décalcifier les dents, comme l'affirme Fosdick: *"It should be kept in mind that all of the acid which serves as the decalcifying agent is derived only from that portion of the diet that remains in the mouth after food is masticated and swallowed"* (2). Et cette rétention dépend d'abord et surtout des caractères anatomiques de la bouche, de la nature des aliments et de la fréquence des repas. Ainsi, il est moins néfaste de consommer vingt cuillerées de sucre d'un coup que quatre cuillerées, cinq fois par jour; dans le premier cas, il y a une attaque possible alors que dans le second; il y en a plusieurs; en chaque circonstance, des acides se formeront sous l'influence du système enzymatique de la cavité buccale.

Ce système enzymatique, deuxième condition essentielle à la formation d'acides, se compose d'enzymes et de coenzymes organiques et inorganiques.

Les enzymes viennent des microorganismes de la bouche: *"It is known that all of the enzymes necessary for the production of lactic acid and other organic acids are elaborated by the microbial flora of the mouth"* (2). Sur ce point, Kite, Shaw et Sognaes sont plus catégoriques que Fosdick: *"The acids formed by the action of saliva on suitable substrate occur as a result of microbial fermentation"* (8). Il est vrai que

la dentine peut fournir une phosphatase; que la ptyaline est sécrétée par la salive. D'une façon générale cependant, on peut affirmer que la flore microbienne buccale est la seule source importante d'enzymes dont l'activité semble dépendre du nombre et de l'espèce de microorganismes.

Certains microorganismes toute fois sont déficients en coenzymes: le lactobacille manque de vitamine B. Les levures devraient rétablir ce déséquilibre, mais il semble bien que cela repose sur la salive et conséquemment sur la diète. Ces deux dernières fourniraient aussi les ions métalliques, surtout le magnésium, nécessaire à la réaction.

Rythme de neutralisation et d'élimination

Sous l'influence de ce système, le substrat se transforme rapidement en acides qui peuvent causer des dommages pendant plus d'une heure, après le repas (9). Leur vitesse de formation varie avec les individus et les segments d'un même bouche. Mais si le sucre et les microorganismes propres sont présents, le Ph sur la surface de la dent passera de 7.0 à 5.0 en 1½ min. (10, 11) et atteindra sa concentration maximum en vingt minutes au plus (2, 4, 9). On voit immédiatement l'importance et la nécessité de certains moyens de neutralisation et d'élimination.

La neutralisation des acides s'opère par la salive dont une des plus importantes qualités est la quantité sécrétée, à l'occasion des repas. Selon Trimble, 1935, elle est en relation étroite avec l'activité de la carie (12). C'est tellement vrai que chaque fois qu'elle est absente, on est en face d'un cas de carie rampante (13). Il ne semble pas y avoir de différence cependant entre un flot copieux et un flot modéré de salive.

Grâce à son fluidité, la salive peut exercer son pouvoir tampon qui dépend de l'état de l'organisme et de la diète. Son efficacité peut se mesurer à l'absence à peu près complète de carie des surfaces buccales des molaires et des surfaces linguales des incisives inférieures. Que le patient devienne malade, un change-

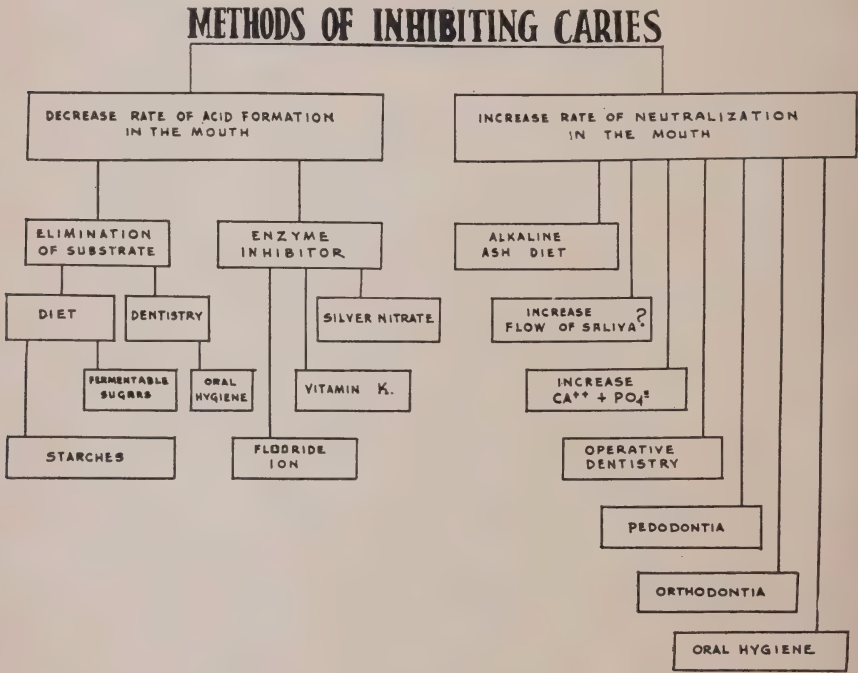
ment s'opère sans tarder: peu importe la maladie, la résistance de la dent restera la même. Il faudra chercher ailleurs, dans la diète, dans la salive qui serait moins abondante et de qualité inférieure, dans l'hygiène buccale, et que sais-je, une explication à cette plus grande susceptibilité à la carie.

Un autre facteur important est l'aspect physique de la bouche. La salive ne jouera son rôle que si elle peut aller partout. D'un autre côté, tout ce qui favorisera la rétention du substrat: malocclusions, points de contact défectueux, surplus gingivaux, bandes orthodontiques mal ajustées, etc., stimulera en même

pouvoir tampon sont des facteurs de toute première importance dans l'activité de la carie dentaire. De telle sorte que la bouche idéale est celle qui ne comporte pas de défauts anatomiques et physiques et qui est munie d'un flot abondant de salive riche en pouvoir tampon.

Moyens de contrôle et de prévention

Cette esquisse du mécanisme de la carie dentaire et des facteurs qui contrôlent son activité nous suggère plusieurs moyens de contrôle et de prévention. Ils peuvent se résumer cependant à ceci: réduction du rythme de formation d'acides et augmentation de leur rythme de neutrali-



temps la formation d'acides. On l'a déjà vu: seule la portion des aliments de la diète qui séjourne dans la bouche peut servir à la décalcification des tissus durs de la dent et il en séjourne d'autant plus que les conditions environnantes sont plus favorables.

L'aspect physique de la cavité buccale de même que le flot de salive et son

sation et élimination, tels qu'illustrés par Fosdick (4).

La réduction du rythme de formation d'acides peut s'obtenir de deux manières: par l'élimination du substrat ou par le contrôle du système enzymatique.

L'élimination des sucres, surtout des sucres raffinés, est le moyen par excellence pour diminuer le rythme de forma-

tion d'acides. Cet objectif peut être difficile à atteindre à cause de l'appétit des gens: l'américain moyen, en 1948, avait besoin de 25 à 40 livres de sucre, annuellement, pour satisfaire à ses besoins mais il en consommait 93 livres (14). C'est un excès de 53 livres par personne et cet excès est, en grande partie, responsable de la carie dentaire. On ne peut pas l'absorber aux repas quand il pourrait être éliminé par les autres aliments, la salive et l'action de la mastication elle-même. Alors on le prend au cours de l'avant-midi, vers trois ou quatre heures ou au coucher, sous toutes de formes, dont en voici quelques-unes:

Quelques aliments populaires et leur contenu en sucre

Chocolat, une tablette	5 à 20	cuillérées à thé	de sucre	
Tarte aux pommes, 1/6 tarte	12	"	"	"
Gâteau au chocolat, 1/12 de gâteau	15	"	"	"
Macaron, un gros	3	"	"	"
Crème glacée, 1/8 de pinte	5 à 6	"	"	"
Lait au chocolat, 5 onces	6	"	"	"
Coca-cola, 6 onces	4 1/3	"	"	"
Marmalade, 1 cuillère à table	3	"	"	"
Gomme à mâcher, 1 tablette	1/2	"	"	"
"Life saver", 1 portion	1/3	"	"	"

Si insatiable que soit cet appétit, la réduction des sucres n'en reste pas moins un moyen très efficace de contrôler ou de prévenir la carie dentaire. On en a suggéré bien d'autres, par exemple une diète bien balancée, comme mesure de contrôle: "*Such statement does not withstand the test of critical scrutiny*" (15); de la vitamine D et du calcium, dans un but de contrôle et de prévention: "*There is no rational basis, at the present time, for the continuation of these empiric and highly ineffective measures*" (16). "*Sugar control is today the only rational and therapeutically successful method in the dietary control of caries*" (17), ce que démontrent bien les études faites en Europe, au cours de la dernière guerre: "*The caries attack rate showed a marked*

reduction which directly paralleled the availability of refined sugars to the war-torn areas of Europe" (18).

C'est d'ailleurs un but à poursuivre pour bien d'autres raisons: pareil excès conduit souvent à l'obésité, à la perte d'appétit et conséquemment à la malnutrition.

Malgré toute leur bonne volonté, les gens ne peuvent pas empêcher tous les acides de se former. C'est pourquoi l'hygiène buccale est si importante.

On connaît l'aphorisme: "*A clean tooth does not decay*". Il a beaucoup plus stimulé la vente de brosses à dents que diminué l'incidence de carie dentaire, car on ne sait pas quand et comment prendre soin de sa bouche. Pour être efficace, le brossage des dents ne doit pas se faire au lever ou au coucher. Stephan (10, 11) et Fosdick (2, 4, 6) l'ont démontré: les acides se forment très rapidement sur la surface de la dent. Pour les empêcher d'agir, il faut les éliminer de la bouche immédiatement après le repas (19) et cela d'une manière décente: puisque les surfaces interproximales et tritantes des dents sont plus susceptibles que les autres; ce sont elles qu'on doit d'abord atteindre. On pourra réduire ainsi de 40% le nombre de nouvelles lésions (19).

Le contrôle du substrat ou l'élimination des acides avant qu'ils n'aient le temps d'agir sont des méthodes efficaces de réduire l'incidence de carie dentaire. Il serait plus pratique toutefois de pouvoir inhiber le système enzymatique, dans sa source ou dans son action.

On l'inhiberait dans sa source avec une substance comme l'ammoniaque qui empêcherait la croissance du lactobacille et transformerait l'équilibre de la flore buccale au profit d'organismes tels que le *B. aerogenes* et autres (20).

On l'inhiberait dans son action, avec une substance comme le fluor qui empêcherait la formation d'acide pyruvique (21). Ce n'est pas à dire que ce soit le seul mécanisme possible d'action du fluor (22) l'important est qu'il joue un rôle. Son application topique amène une ré-

duction de carie allant de 25 à 40% (23, 24). On connaît mieux les merveilleux effets de sa présence dans l'eau potable. Ils sont si impressionnants que l'on ne devrait pas tarder à le voir dans toutes nos sources d'eau. L'idéal toutefois serait de trouver un inhibiteur d'enzymes que le manufacturier ajouterait au sucre avant de le mettre sur le marché. Ce moment arrivera peut-être, tant il y a de recherches en cours avec les composés les plus divers (25).

Le second grand moyen de contrôler l'activité de la carie dentaire consiste à augmenter le rythme de neutralisation et d'élimination des acides, ce qui n'est pas facile. On ne peut pas augmenter le flot de salive ni son contenu en ions Po_4 ou Ca . Il est vrai qu'un régime riche en fruits frais et en légumes semble avantageuse; mais comment en déduire que les résultats obtenus en dépendent?

Ici cependant, le dentiste peut jouer un rôle important s'il corrige les défauts anatomiques de la bouche de ses patients, s'il éduque ceux-ci sur la nécessité de l'hygiène buccale, de visites régulières et fréquentes à son bureau et s'il met à leur disposition les différentes méthodes de diagnostic et d'évaluation de traitement qu'il connaît: tests d'activité de la carie, analyses de diète, radiographie complète de la bouche, etc. De cette manière, il pourra déterminer les facteurs en cause et leur apporter une solution adéquate. Voici deux exemples: si l'activité de la carie est grande, la diète riche en sucre, le pouvoir tampon de la salive bas et la condition physique de la bouche normale, il suffira de réduire la consommation de sucre et d'augmenter la quantité de fruits frais et de légumes de la diète: si, par ailleurs, l'activité de la carie est grande, la diète pauvre en sucre, le pouvoir tampon de la salive bas et la bouche pleine de défauts anatomiques et mécaniques, le cas sera difficile; la correction des défauts, une bonne hygiène buccale, une diète dépourvue de sucre et certains traitements au fluor donneront cependant de bons résultats.

Résumé et conclusions

L'activité de la carie dentaire dépend du rythme de formation d'acides et de celui de leur neutralisation et élimination.

Le rythme de formation d'acides repose sur la présence d'un substrat, de préférence les monosaccharides et les disaccharides, et d'un système enzymatique appropriés.

Le rythme de leur neutralisation et élimination dépend de la salive et des caractères physiques de la bouche.

Pour prévenir la carie dentaire ou la contrôler, il faut (15, 26, 27):

- 1) Avertir les parents d'amener leurs enfants chez le dentiste dès que toutes leurs dents primaires ont fait éruption, soit vers l'âge de deux ans et, par la suite, aussi souvent que trois ou quatre fois par année, selon l'état de la bouche ou les révélations des tests.
- 2) Leur apprendre l'importance d'éliminer les sucres entre les repas et de les réduire au minimum aux repas eux-mêmes; au besoin, les éliminer complètement, pour une certaine période.
- 3) Leur apprendre quand et comment brosser leurs dents.
- 4) Éliminer tout point et fissure susceptible, aussi tôt que possible (odontotomie prophylactique).
- 5) Faire des applications topiques de fluor, d'une manière routinière.
- 6) Corriger les dents en malposition.
- 7) Voir à ce que l'enfant reçoive un régime adéquate.

C'est ainsi que la tragédie dont nous parlions au début aurait pu être prévenue.

BIBLIOGRAPHIE

- 1) Reports of Evaluating Committees, "Mechanism of the caries process", J. D. Res., 27:419-21, 1948.
- 2) Fosdick, L. S., "Notes de cours", 1952.
- 3) Schour, I., Massler, M., "Dental Caries Experience in Postwar Italy: Prevalence in Various Age Groups"; J.A.D.A., 35:1-6, July 1947.
- 4) Fosdick, L. S., "The Present Status of the Dental Caries Problem", Northwestern University Bulletin. Dental Research and Graduate Study, 43, 20:7, March 8, 1943.
- 5) Report of the Councils on Dental Health and Dental Therapeutics of the A.D.A., "Sugar and dental caries", J.A.D.A., Oct. 1953.
- 6) Fosdick, L. S., Campaigne, E. E., Fancher, O. E., "Rate of Acid Formation in Carious Areas: the Etiology of Dental Caries", Illinois D. J., 10:85, March 1941.
- 7) Becks, Hermann, "Salivary and Bacteriological Considerations in the Control of Dental Caries", J. Am. Col. Den., 9:184, June 1942.

- 8) Kite, O. W., Shaw, J. H., Sognnaes, R. F., "An Influence of Dental Caries Experience produced in Rats by Tube Feeding", J. D. Res., 29:668, Oct. 1950.
- 9) Northwestern University Dental School, "The Cause and Control of Dental Caries", 1951.
- 10) Stephan, R. M., Miller, B. F., "A Quantitative Method for Evaluating Physical and Chemical Agents which Modify Production of Acids in Bacterial Plaques on Human Teeth", J. D. Res., 22:45-51, Feb., 1943.
- 11) Stephan, R. M., "Changes in Hydrogen Ion Concentration on Tooth Surfaces and in Carious Areas", J.A.D.A., 27:718-723, May, 1940.
- 12) Trimble, H. C., Ethrington, J. W., Losch, P. R., J. D. Res., 17:299, 1938.
- 13) Suher, T., D.M.D., M.S., Savara, B.S., M.S., Dixon, J., D.M.D., Portland, Oregon, "Diminution of Salivation", J.D.C., 2e. numéro 1953.
- 14) Food Balance Sheets, Food and Agriculture Organisation of the United Nations, Bureau of Agricultural Economics, U.S. Dept. of Agriculture, April, 1949.
- 15) Massler, M., "Dental Caries in the Growing Child", Dentistry for Children, 3e. édition 1952.
- 16) Schour, I., "Calcium Metabolism and Teeth", J.A.M.A., 110: 870-877, March 1938.
- 17) Jay, P., "The Effect of Substrate on Oral Flora", J.A.D.A., 37:416-18, Oct., 1948.
- 18) Krohn, C., Pedersen, P. O., "Decrease in the Incidence of Dental Caries in 6 to 7 years old Copenhagen Elementary School Children 1936-1943", Acta Odont., Scandinav., 6:130-151, 1945.
- 19) Fosdick, L. S., "The Reduction of the Incidence of Dental Caries: Immediate Tooth Brushing with a Neutral Dentifrice", J.A.D.A., 40:133-143, Feb., 1950.
- 20) Kessel, R. G., O'Donnell, J. F., Kirch, E. R., Wach, E. C., "The Biological Production and Therapeutic Use of Ammonia in the Oral Cavity in relation to Dental Caries Prevention", J.A.D.A., 33:695-714, June, 1946.
- 21) Fosdick, L. S., "Factors in Natural Immunity to Caries", J.A.D.A., 37:419-25, October, 1948.
- 22) Leblanc, A., "Hypothèse fluor-carie dentaire", J.A.D.C., 13:277-81, Mai, 1953.
- 23) Knutson, J. W., Armstrong, W. D., "The Effect of Topically Applied Fluoride on Dental Caries Experience", Pub. Health Rep., 58:1701-1715, Nov., 1943.
- 24) Bibby, B. G., "Use of Fluorine in the Prevention of Dental Caries: Effect of Sodium Fluoride Applications", J.A.D.A., 31:317-21, March, 1944.
- 25) Session (94th) of the A.D.A., "Therapeutic Dentifrices", J.A.D.A., January 1954.
- 26) Rovestad, G. H., "Oral Health and the Child Patient", The Forthright, Chicago, Nov., 20, 1950.
- 27) Rovestad, G. H., "Dental caries: a Preventable Disease", Quarterly Bulletin, Northwestern University Medical School, Chicago, Vol. 24, no 1, Page 54.

La confection des appareils prothétiques "immédiats"

par M. A. PLEASURE, D.D.S., M.S., Chief, Prosthetic Section, Bronx V. A. Hospital. Associate Clinical Professor of Dentistry, Columbia University.

La prothèse immédiate a pour but d'éviter au patient des inconvénients sociaux, économiques et fonctionnels.

Les appareils prothétiques immédiats sont confectionnés d'avance et prêts à être placés dans la bouche, avant de procéder à l'extraction des dents.

A la première séance, on fait préciser au patient pour quel motif il est venu nous consulter et alors, on procède à un examen clinique sommaire.

Le patient est renseigné de façon explicite afin qu'il prenne connaissance des paiements qu'il aura à verser. La prothèse immédiate constitue un remplacement fonctionnel et esthétique des organes naturels; elle est bien supportée par des tissus récemment traumatisés. Le processus de guérison peut être à l'origine de certains changements rendant le port de cette prothèse impossible. L'opérateur peut faire certaines retouches (corrections consécutives), ce qui permet d'améliorer l'accoutement et la stabilité de la pièce (rebasage, etc.), mais ces procédés n'écartent pas cependant la nécessité de confec-

tionner de nouveaux appareils, quand les tissus ont subi une guérison complète (après 6 mois ou 1 an). Il faut mettre le patient au courant des frais supplémentaires qu'il devra encourir pour ce service. Il est recommandé de soumettre nettement au patient le plan complet du traitement avant d'entamer les pourparlers financiers.

Examen pré-opératoire

Avant de procéder aux extractions, il est nécessaire de préparer des modèles d'étude, en ayant au préalable pris les empreintes des arcades dentaires en alginate. Il faut prendre note de la teinte ainsi que de la forme des dents antérieures, y compris certains détails que l'on désire reproduire. Il faut consulter le patient pour connaître la forme, la dimension et la teinte qu'il désire. Une photographie de face et de profil, la manière de sourire, sont autant de détails pouvant être très utiles; parfois même, il est utile de prendre la photo des dents et des gencives (35 mm.). Il faut vérifier la dimension verticale physiologique et l'occlusion centrique de la denture naturelle du patient. Il faut prendre note de l'espace qui nous est alloué entre la tubérosité du maxillaire supérieur et le coussin rétro-

molaire du maxillaire inférieur. Il faut aussi prévoir si l'on sera forcé de réduire les crêtes alvéolaires. La crête alvéolaire supérieure de la 1ère prémolaire droite à la 1ère prémolaire gauche, est-elle par trop proéminente? La lèvre supérieure sera-t-elle repoussée extérieurement par la nouvelle pièce de prothèse?

Le chirurgien pourra, au moment propre, résoudre ces problèmes en créant les conditions favorables qui rendront la pièce de prothèse préférable à la dentition naturelle au point de vue esthétique.

Prenant en considération l'âge et l'état de santé du patient, on peut préparer un plan de traitement pour l'extraction des dents postérieures du haut et du bas, ainsi que la diminution des crêtes alvéolaires, si nécessaire. La coopération étroite entre le chirurgien et le prothésiste dans cette étape est essentielle. Examiner ensemble les modèles d'étude.

Les dents antérieures du patient restent en place pendant cette période jusqu'à la guérison complète des rebords alvéolaires postérieurs.

Les empreintes des arcades dentaires

L'empreinte complète en alginate est prise et on procède au coulage de modèles en pierre, qui serviront à la construction de porte-empreintes individuels. On trace au crayon sur les modèles, les limites des porte-empreintes pour inclure et couvrir les dents existantes. Les dents sont couvertes d'une couche de cire laminée jusqu'à la hauteur du contour de la muqueuse labiale. Le modèle entier (dents comprises), est couvert avec une seconde couche de cire laminée jusqu'à la hauteur du tracé au crayon. Accordez $\frac{1}{8}$ " d'extension à la limite postérieure. Employer de grands porte-empreintes remplis d'alginate pour la prise de ce modèle "agrandi" et couler un nouveau modèle en plâtre. Couvrir le nouveau modèle avec 2 couches de cire rose laminée. Ensuite cuire en résine acrylique transparente. Finir et polir. Essayer dans la bouche du patient et retoucher si nécessaire, pour faciliter l'insertion dans la bouche.

Les empreintes finales

Vérifiez le contour du porte-empreinte individuel. Diminuez de 1 à 2 mm. pour le repli de la muqueuse buccale. Servez-vous de la pâte "Kerr" pour la correction périphérique. L'empreinte finale est complétée par une mince couche d'alginate dans le porte-empreinte. Préparez le porte-empreinte en le perforant à la fraise (3 à 5 trous) au niveau de la voute palatine avec une fraise ronde No 8 et quelques petits trous rétentifs au niveau des bords incisifs des dents restantes. Malaxez une demi-portion de DP alginate avec 2/3 portion d'eau (35 cc.) de 60-65° F. Spatulez avec vigueur et rapidement pour obtenir une pâte homogène et remplissez le porte-empreinte en distribuant la pâte dans toutes les sinuosités périphériques des fausses gencives. Couvrir avec une petite spatule la région des dents antérieures, repli muqueux. Ensuite, introduire dans la bouche pendant 3 à 4 minutes. Servez-vous de jet d'eau pour faciliter le relâchement à la périphérie. Retirez de la bouche avec traction dans la direction des dents. Coulez les modèles immédiatement, en pierre.

Préparez une plaque-base avec bourrelet d'articulation postérieure. Préparez une plaque-base de double épaisseur avec des bourrelets d'articulation. Ajustez dans la bouche du patient le bord postérieur, accentuez la ligne de fond (post-dam) et établissez le plan d'occlusion. Le plan d'occlusion peut être modifié radicalement dans les cas de suroccclusion de la dentition naturelle, et visibilité excessive des incisives.

Attachez le "Central Bearing (Coble)" à la plaque-base supérieure, à la ligne médiane où elle s'intersecte avec la ligne qui joint les surfaces mésiales des premières molaires. Taillez des encoches dans le bord bucco-occlusal des bourrelets au niveau des premières molaires. Ces encoches serviront de points de repère. Attachez l'appareil à la plaque-base inférieure.

Découpez et mettez au nez et menton du patient des triangles de ruban gommé

et faites-le asseoir droit, loin du dossier; apprenez-lui à placer la mandibule dans la position de repos physiologique et adaptez le compas pour ne pas oublier la distance entre les triangles indicateurs. Vérifiez avec grand soin.

Insérez dans la bouche la plaque-base inférieure; adaptez le "Central Bearing" de telle façon à ce que la dimension verticale en occlusion soit 3 à 4 mm. de moins que la position du repos physiologique. Surveillez la distance qui existe entre les plaques-bases dans la région des tubérosités et des coussins rétromolaires.

Si la dimension verticale est suffisante, faites exécuter au patient quelques mouvements de propulsion et de rétropulsion afin de le familiariser avec la plaque et la position de rétropulsion la plus accentuée. Ensuite, faites exécuter au patient quelques mouvements de latéralité. L'arc gothique qui s'ensuit devrait avoir un sommet aigu à la rencontre de ces mouvements excursifs. Appliquez une couche de plastique laminé (1 mm. d'épaisseur). Perforer 1 trou de 1 mm. directement dans le sommet de l'arc gothique et adaptez-le à la surface supérieure. Déplacez la mandibule du patient jusqu'à le "Central Bearing" tombe dans le "Centric." Apprenez-lui à maintenir la mandibule dans cette position avec une légère pression verticale et non *latérale*. Préparez un peu de plâtre à prise rapide et couvrez les régions gauche et droite des blocs d'articulation, afin de sceller les deux maquettes dans la position centrique. Après durcissement, retirez de la bouche, séparez le haut du bas des maquettes d'articulation en plâtre; il faut ensuite retoucher celles-ci et les débarrasser du surplus de plâtre. Articulez le modèle du haut sur l'articulateur. Servez-vous des maquettes d'articulation pour avoir une bonne relation entre le modèle du haut et le modèle du bas.

Montage des dents

Utilisez un décortiqueur coupant pour accentuer les festons gingivaux autour des dents restantes sur le modèle. Vérifiez par la radiographie la relation de la gin-

cive au rebord alvéolaire marginal. Dessinez sur le modèle une ligne au crayon pour indiquer le niveau désiré des papilles dans la région incisive. Remarquez les proéminences et les zones de rétention qui peuvent nécessiter une réduction. Avec pression, casser avec le doigt l'incisive centrale droite et arrondissez la crête labiale avec un couteau ou un ciseau. Essayez une dent postiche en porcelaine, pour contrôler son contact et son occlusion. Vérifiez l'inclinaison labiale et la proéminence; si c'est nécessaire, sculptez dans le modèle en plâtre afin de réduire la proéminence labiale de la dent. Quand la position de la dent est satisfaisante, collez un peu de cire du côté lingual pour la stabiliser.

Brisez la canine droite, sculptez la crête comme si c'était nécessaire pour obtenir une bonne adaptation de la dent en porcelaine en relation avec la centrale droite. Surveillez la forme de l'arc, etc. Enlevez la latérale gauche, sculptez la crête, placez la dent en porcelaine, en vous servant de la latérale droite comme point de repère (guide). Enlevez la centrale gauche et montez une nouvelle dent en cire, et finalement la canine gauche. Montez les dents postérieures par rapport au plan occlusal et au niveau du sommet des crêtes alvéolaires. Faites de même avec les canines inférieures par rapport aux canines supérieures. Remarquez la nécessité d'un certain minimum de suroccclusion. Faites un montage esthétique et convenable des incisives inférieures; placez la première molaire inférieure afin de localiser la relation de cette dent à la crête alvéolaire et à l'occlusion. Corrigez si nécessaire la position des 6/6. Cirez et sculptez les bords des dentiers. Tenir compte que l'essayage n'est pas nécessaire pratiquement dans le cas de prothèse immédiate. Il est important de voir le patient afin de lui expliquer et montrer le choix des dents pour avoir son approbation. Faites rincer à l'eau bouillante, les modèles en cire; mais avant qu'ils soient bourrés, les modèles de base peuvent recevoir la retouche finale au niveau de la

crête et le technicien peut faire un duplicata des modèles afin de confectionner une plaque transparente en acrylique comme guides pour la résection chirurgicale des crêtes pendant l'insertion.

Faites cuire la résine, finissez et polissez ensemble les matrices en acrylique. Les

dentiers finis doivent être examinés par le dentiste et être retouchés par lui afin d'être prêts pour l'insertion. Conservez-les dans la solution aqueuse de Zéphiran (1:1000) jusqu'à ce que le chirurgien en ait besoin. Avant la mise en bouche, rincez les dentiers dans l'eau.

UNIVERSITE DE MONTREAL FACULTE DE CHIRURGIE DENTAIRE

Cours post-scolaires de courte et de longue durée

Anesthésie et chirurgie

Cours du jour: du 17 au 22 janvier 1955
du 7 au 12 mars 1955

Cours du soir: les 25, 27 janv., 1, 3 fév. 1955
les 22, 24, 29, 31 mars 1955

Couronnes et ponts

Cours du jour: du 17 au 22 janvier 1955
du 7 au 12 mars 1955

Cours du soir: les 25, 27 janv., 1, 3 fév. 1955
les 22, 24, 29, 31 mars 1955

Dentisterie opératoire

Cours du jour: du 17 au 22 janvier 1955
du 14 au 19 mars 1955

Cours du soir: les 25, 27 janv., 1, 3 fév. 1955
les 22, 24, 29, 31 mars 1955

Endodontie

Cours du jour: du 10 au 15 janvier 1955
du 14 au 19 mars 1955

Cours du soir: les 25, 27 janv., 1, 3 fév. 1955
les 22, 24, 29, 31 mars 1955

Périodontie

Cours du jour: du 17 au 22 janvier 1955
du 14 au 19 mars 1955

Cours du soir: les 25, 27 janv., 1, 3 fév. 1955
les 22, 24, 29, 31 mars 1955

Prothèse

Cours du jour: du 17 au 22 janvier 1955
du 14 au 19 mars 1955

Cours du soir: les 25, 27 janv., 1, 3 fév. 1955
les 22, 24, 29, 31 mars 1955

Radiologie et diagnostic

Cours du jour: du 17 au 22 janvier 1955
du 14 au 19 mars 1955

Cours du soir: les 25, 27 janv., 1, 3 fév. 1955
les 22, 24, 29, 31 mars 1955

Cours post-scolaire en Orthodontie

Le prochain cours post-scolaire en Orthodontie commencera le 6 septembre 1955, et se poursuivra pour une période de 16 mois.

L'inscription est limitée à 5 diplômés d'une faculté dentaire reconnue. Ce cours se donne en anglais et en français, sous la direction du docteur Paul Geoffrion, directeur et chef du service d'Orthodontie.

Cours post-scolaire en chirurgie et anesthésie

Le service de Chirurgie et d'Anesthésie de la Faculté de chirurgie dentaire de l'Université de Montréal, offre un cours de perfectionnement d'une année scolaire, qui donne droit à un certificat, à certaines conditions.

Ce cours couvre les domaines de la pathologie, anatomie, bactériologie, anesthésie générale et locale, endodontie et chirurgie buccale. Le candidat doit écrire une thèse sur un sujet choisi par le professeur de concert avec l'élève.

**Pour tous renseignements, s'adresser au Doyen, Faculté de chirurgie dentaire,
Université de Montréal, Case postale 6128, Montréal, Canada.**

ÉDITORIAL

Une question se pose...

Nos facultés dentaires sortent-elles assez de diplômés pour répondre aux besoins de la population? Nous répondons tout de suite: non!

Plaçons-nous sur le plan national. La proportion du nombre des dentistes en rapport avec la population s'est aggravée, l'année dernière. Le pourcentage total en janvier 1952 était de 1 dentiste par 2,686 de population; en janvier 1954, il était de 1 pour 2,790. Depuis quinze ans, le nombre des dentistes a augmenté de 1,086 unités, mais la population s'est tellement développée, que la proportion des dentistes avec elle est pire qu'elle ne l'était en 1938. Et selon toute probabilité, le nombre des citoyens canadiens ira en croissant et le nombre maximum d'élèves que peuvent recevoir nos cinq facultés dentaires reste fixe. Avec les années, l'écart entre le chiffre de la population du Canada et le nombre de dentistes, appelés à la servir, s'agrandira.

Voilà pour l'aspect statistique.

Il y a autre chose; il y a le volume des traitements qui, lui aussi, se fait plus lourd. On veut dire par volume des traitements, la somme des soins que le public veut faire donner à ses dents. Les campagnes d'hygiène dentaire entreprises sous toutes les formes, depuis environ une décade commencent à rendre; les Canadiens attachent plus d'importance à leurs dents; ils ont été rendus conscients de leur denture et se rendent plus volontiers chez le dentiste pour la faire traiter.

L'augmentation de la population et le développement de l'hygiène dentaire, demanderaient un plus grand nombre de dentistes et les facultés ne peuvent le fournir.

Une seule solution s'impose: la construction de nouvelles écoles dentaires ou l'agrandissement de celles qui existent déjà. C'est facile à dire, pas facile à réaliser! Mettre sur pied une école dentaire veut dire la dépense de millions, le recrutement d'un corps de professeurs, la recherche d'élèves: trois facteurs d'importance!

Regardons la situation chez les dentistes de langue française. La proportion des dentistes en rapport avec le nombre des habitants de la province de Québec était au 1er janvier 1954 de 1 dentiste par 3,353 individus. Nous sommes en meilleure posture que nos confrères anglophones quant au potentiel de formation universitaire. Notre Faculté peut déverser environ soixante nouveaux diplômés, par année, au sein de notre population. Ce nombre *reussirait* à combler les vides causés par les décès et les retraites et marcher de pair avec l'augmentation des habitants canadiens-français.

Nous avons écrit jusqu'ici au *conditionnel*, parce que telle n'est pas la situation présente. Par exemple, en 1953, quelque douze dentistes de langue française sont morts; un certain nombre a certainement dû prendre sa retraite. Pour combler ces vides, dix-sept nouveaux dentistes ont laissé l'Université. Parmi ceux-ci, quelques-uns se sont dirigés soit au service de l'armée, soit au service des gouvernements municipaux, provinciaux, fédéral, soit dans d'autres provinces, soit dans des cours d'études post-universitaires. Le nombre des nouveaux dentistes qui se sont mis au service du public, suffit à peine à remplacer ceux qui sont partis et, pourtant, la population augmente et elle s'éveille de plus en plus à la préoccupation dentaire.

A ce rythme, dans quelques années, le public ne pourra pas disposer de dentistes en quantité suffisante pour ses besoins.

Une question se pose. Pourquoi n'y a-t-il pas plus d'étudiants, dans une faculté qui peut en former un plus grand nombre? Parce que vous et moi, nous ne nous préoccupons pas assez d'organiser la relève! Parce que nos sociétés dentaires ne font à peu près rien pour attirer dans notre profession des jeunes gens doués et travailleurs.

On laisse aux autres le soin de trouver nos successeurs! En certains milieux, on en fait uniquement un problème universitaire! L'Université fait pourtant sa grosse part; chaque année, elle se prive d'un de ses professeurs pour l'envoyer dans les collèges d'études secondaires, fournir aux élèves des renseignements sur notre profession.

A la profession toute entière incombe la responsabilité d'utiliser tous les moyens possibles pour non seulement fournir aux universités des candidats en nombre suffisant, mais aussi d'excellente qualité. Cette obligation vaut davantage pour les années que nous traversons, que pour celles de l'avenir. Les jeunes gens qui sont présentement aux études, sont nés vers 1930. Le taux des naissances entre 1930 et 1940 est relativement bas. Ainsi, durant les prochaines années, toutes les carrières se disputeront un petit nombre de candidats. Actuellement, on doit agrandir les écoles primaires; dans trois ou quatre ans, on s'occupera des écoles secondaires; il faut alors prévoir vers 1960, une grande affluence d'élèves dans le domaine universitaire. Voilà donc un état de choses dont devraient se préoccuper les dentistes et les sociétés dentaires: on ne se préoccupe pas suffisamment de se préparer des successeurs.

GERARD DE MONTIGNY.

Dent vénérée par 400 millions de personnes

Environ 1/5 de la population totale du globe, soit 40,000,000 bouddhistes, vénèrent religieusement une dent jaunie par l'âge: cette dent, qui mesure 2 pouces de largeur et un pouce de diamètre serait la canine gauche supérieure de Gautama Buddha, le fondateur de la religion bouddhiste.

La dent est renfermée dans un lotus d'or recouvert de plusieurs chasses en formes de cloche incrustées de rubies et festonnées de chaînes d'or; ce bijou repose sur une table d'argent massif dans une pièce hermétiquement fermée exhalant une odeur répandue par des tonnes de fleurs d'un édifice somptueux appelé le Temple de la Dent, à Kandy, Ceylon.

Cette dent a toute une histoire! On prétend qu'elle a été retirée du bûcher funéraire de Bouddha, en l'an 543, avant Jésus-Christ. Elle a été ramenée du sud de l'Inde, à Ceylon, 800 ans plus tard.

Au seizième siècle, les Portugais s'en emparèrent et la détruisirent en prétendant que cette dent était l'occasion de scandale religieux. On la fit brûler et on en répandit les cendres dans la mer. Auparavant, les bouddhistes avaient offert en vain une somme fantastique à l'évêque de Goa pour recouvrer leur talisman: cent millions de dollars en or!

Peu après la destruction publique de la dent, les chefs de Ceylon prétendirent qu'on n'avait pas brûlé la bonne et que la dent authentique était toujours restée en leur possession.

De nos jours encore, des centaines de milles pèlerins, venant de tous les coins du monde, se rendent à Kandy pour y admirer le temple luxueux qui abrite la relique sacro-sainte et pour vénérer l'ex-voto de Bouddha. Ces pèlerins y déposent des offrandes généreuses d'or, d'argent, de bijoux et de vêtements sacerdotaux d'une richesse inouïe.

Nouvelles de l'Association

Dates de réunions

Conseil d'Enseignement dentaire, les 27 et 28 janvier 1955

Comité exécutif, les 24 et 25 mars 1954

Visites du président pour février et mars 1955

Le président se rendra aux sociétés dentaires suivantes:

Association dentaire du Manitoba—	le 21 février
Société dentaire de Saskatoon—	" 23 "
Société dentaire d'Edmonton—	" 24 "
Société dentaire de Calgary—	" 25 "
Société dentaire de Victoria—	" 28 "
Société dentaire de Vancouver—	1er mars
Société dentaire de la vallée d'Okanagan	3 mars
Société dentaire de Lethbridge—	5 "
Société dentaire de Regina —	7 "

Recommandations faites à l'organisation mondiale de la santé

A l'invitation du docteur M. G. Candau, directeur général de l'Organisation Mondiale de la Santé, des dentistes de plusieurs pays se sont réunis à Genève, en octobre, pour faire des suggestions au sujet des choses dentaires. C'est la Fédération dentaire internationale qui a suscité cette consultation. Deux représentants des Etats-Unis assaient à la réunion; l'un, le docteur John W. Knutson, chef dentaire des services de santé publique des E.U., qui agit comme président de l'assemblée et le docteur Philipp E. Blackerby, du conseil d'Enseignement dentaire de l'Association dentaire américaine.

On a suggéré à l'organisation Mondiale de la Santé d'organiser et d'entraîner un groupe de dentistes qui mettrait en oeuvre un programme destiné à compiler des renseignements sur la fréquence des maladies dentaires et à promouvoir les recherches et l'éducation dentaires.

Message de l'Association dentaire britannique

"Le président et les membres de l'Association dentaire britannique vous prient d'accepter leurs condoléances pour les pertes de vie et les dommages causés par l'ouragan. Ils espèrent que vous et vos confrères n'ont pas souffert de ce désastre.

Parker Buchanan, secrétaire."

Nouvelle édition de "Facts"—coût réduit

L'A.D.C. vient de publier une nouvelle édition du fascicule "Facts," qui traite des dernières données au sujet de la fluoruration. Le prix de cette publication est de \$2.00, pour 100 copies. Le texte de ce pamphlet est sous forme des questions et réponses et il est destiné à renseigner le

grand public sur la question. On s'est efforcé de répondre aux questions les plus fréquemment posées par le public. On s'adresse à l'Association dentaire canadienne, 234 rue St-Georges, Toronto, 5, Canada.

Nouvelles sur la fluoruration

—On a commencé à installer (22 septembre 1954) des appareils à fluoruration dans la plus grande ville au monde à date; il s'agit de Philadelphie qui compte une population d'au delà de deux millions d'habitants.

—La ville de Dartmouth, Nouvelle-Ecosse, s'est prononcée en faveur de la fluoruration, le 22 septembre dernier.

—On compte actuellement 1000 villes des Etats-Unis qui fluorurent leur eau de consommation; ce qui veut dire que près de 24,000,000 de personnes boivent de l'eau fluorurée.

—L'armée américaine a décidé d'installer de dispositifs de fluoruration à ses dépôts de soldats.

—Dans la livraison d'octobre du Scientific Monthly, qui est l'organe de l'Association américaine pour l'Avancement de la Science, le docteur James Shaw, de la faculté de médecine de l'Université Harvard, écrit que "sans nul doute, la fluoruration des eaux de consommation constitue la première solution adéquate du problème de la carie dentaire."

—L'Industrial Medicine and Surgery écrivait dans sa livraison de septembre au sujet des municipalités, qui ont voté contre la fluoruration: "Tôt ou tard, la fluoruration sera une règle générale aux Etats-Unis, partout où l'eau est distribuée à la population; en attendant, ce sont les habitants qui ne votent—les enfants—qui souffrent de l'étroitesse d'esprit de certaines villes."

—A Swift Current, Saskatchewan, le Conseil Municipal a décidé de fluorurer l'eau de l'aqueduc.

—A Prince George, Colombie Britannique, le Conseil de Ville a voté en faveur de la fluoruration de l'eau; celle-ci commencera l'an prochain. On croit que c'est la première ville de la Colombie Britannique à adopter cette mesure.

—Trois villes de Nouvelle-Ecosse (Halifax, fév. 54 — Kentville, mars 54 — Dartmouth, oct. 54) ont adopté la fluoruration.

—Le ville d'Osawatomie, Kansas, est la millièmième ville à adopter la fluoruration.

—En juin dernier, Chicago, la deuxième plus grande ville du continent, a adopté la fluoruration.

—Nonobstant les prétentions de certains adversaires de la fluoruration, le docteur F. Lull, secrétaire de l'Association médicale

américaine, écrivait récemment dans une lettre: "Peu importe les termes qu'on emploie, on reste persuadé que la meilleure méthode de prévenir la carie chez les enfants est de fluorurer l'eau des aqueducs."

—Woodstock est la première ville du Nouveau-Brunswick à fluorurer son eau de consommation.

—En Saskatchewan, les villes de Régina, Saskatoon et Prince Albert seront appelées à voter sur cette question le 3 novembre.

—Toronto se décidera quand le ministère de la Santé d'Ontario se sera prononcé.

—En Angleterre, on commence un programme d'essai sur la fluoruration à Anglesey, Darlington, Kilmarnock et Watford.

—A la demande de la Fédération canadienne des Maires et Municipalités, la Ligue de Santé du Canada a écrit à 76 chefs de service de médecine préventive. Sur ce nombre, aucune réponse défavorable: 69 se prononcèrent catégoriquement en faveur de cette mesure; 6 ont refusé de prendre position; un suggéra la prudence, mais ne s'opposa pas.

—En juin dernier, l'Association médicale canadienne s'est prononcée catégoriquement en faveur de la fluoruration.

—La division dentaire du ministère de la Santé Nationale et du Bien-Etre social, dans son rapport de 1954, soumis le 1er septembre, souligne la continuation de la même tendance favorable observée au cours des années précédentes.

—La ville de Yorkton, en Saskatchewan, a voté le 10 septembre sur la question de fluoruration. Cet projet a été défait par un petit vote.

Enquête sur l'économie de la profession

On publiera bientôt, par tranches, les résultats du relevé récemment compilé sur l'économie de l'exercice dentaire au Canada. Quand les différentes parties auront été publiées, on pourra les réunir pour posséder l'ensemble de cette enquête.

On s'entend sur la nécessité des statistiques pour faire face aux nouveaux problèmes des services de santé. Autrefois, il suffisait qu'un personnage en vue d'un groupement professionnel fasse une déclaration officielle pour qu'on se rangeât de son avis, sans qu'il ait à fournir des chiffres à l'appui de son assertion. Aujourd'hui, il faut que toute politique soit appuyée sur des statistiques récentes si on veut qu'elle soit acceptée comme juste.

Les informations contenues dans ce relevé serviront à l'Association dentaire canadienne pour répondre aux demandes de renseignements qui lui parviennent sans cesse au sujet de l'exercice de la dentisterie. On a donné à cette enquête la plus grande latitude possible, parce qu'on ne peut prévoir quelles seront les exigences futures. Un

exemple, où des statistiques s'avèrent des plus précieuses pour une profession, se présente quand il s'agit de projets de loi dans le domaine de la santé. Quand un projet de loi a été mis en force et quand on y découvre des erreurs que l'étude des statistiques aurait pu prévenir, il est trop tard pour faire machine arrière et le dentiste se trouve dans une situation intenable. C'est la première fois qu'on entreprend au Canada une enquête de cette envergure dans le domaine dentaire. Dans le passé, au cours de ces dernières années, on a entrepris des enquêtes sur certains aspects particuliers de notre profession et les chiffres qui en sont résultés n'ont jamais pu être contrôlés d'une façon précise et ont toujours été acceptés avec un doute.

Les renseignements révélés par la présente enquête pourront être utiles à tous les membres de la profession, s'ils sont bien étudiés. On pourra y voir des statistiques sur les revenus et les dépenses des cabinets dentaires en rapport avec leurs différentes circonstances. Par exemple, on constatera que les revenus des dentistes varient selon la longueur des rendez-vous, le nombre de fauteuils à leur disposition, le nombre de leurs employés, l'équipement dont ils disposent et d'autres facteurs du même ordre.

Les faits révélés par l'enquête au sujet du nombre de patients traités par année, la moyenne des séances consacrées à chaque patient, le nombre d'heures de travail du dentiste et d'autres renseignements seront des plus utiles, quand il s'agira de réaliser des programmes de santé dentaire.

En 1945, l'Association a collaboré avec le Bureau des Statistiques du Dominion pour entreprendre une enquête sur les années 1941-2-3-4. Cette enquête n'était pas aussi complète que celle qui vient d'être complétée. Toutefois, les techniques qu'on a alors utilisées ressemblent à celles qui ont été employées en 1953 et on peut donc en comparer les données jusqu'à un certain point. Dans certaines circonstances, on mettra en parallèle les chiffres de 1944 et 1945 et ceux qui viennent d'être recueillis. Ces comparaisons serviront à montrer que des changements radicaux se sont produits entre 1944 et 1953.

En février dernier, tous les dentistes du Canada ont reçu un questionnaire; une enveloppe affranchie et une lettre accompagnaient le questionnaire, pour expliquer la procédure à suivre et à la date ultime, soit le 11 juin, environ 1/3 des dentistes avaient répondu au questionnaire. Voici le pourcentage des réponses par provinces:

Colombie britannique	28%
Alberta	45%
Saskatchewan	40%
Manitoba	30%

Ontario	28%
Québec	21%
Nouveau-Brunswick	31%
Nouvelle-Ecosse	30%
Ile-du-Prince-Edouard	29%
Terre-Neuve	31%

On croit que le nombre des réponses de chaque province est satisfaisant pour le but que se propose l'enquête. Il en est de même pour le total des réponses, si on le compare au pourcentage des réponses d'autres enquêtes analogues. On se demande si oui ou non les dentistes, qui ont répondu au questionnaire, représentent bien la profession en général, tant qu'aux régions du pays, tant qu'à l'âge ou d'autres facteurs. Comme on le voit plus haut, on se rend compte que toutes les provinces y ont participé. Le pourcentage des réponses donne aussi une idée assez juste de la répartition dans les grands centres ou dans les localités urbaines. Les âges et les années de pratique indiquées dans les réponses sont assez variés pour les besoins de la cause. Il faut toutefois se rappeler que les renseignements que fournira cette enquête proviennent uniquement des réponses des dentistes.

On publiera, par tranches dans le Journal, les données de l'enquête et on aura ainsi un tableau précis de l'économie de l'exercice dentaire au Canada.

La fraise "ultrasonique"

Dans la revue *Better Homes and Gardens* on pouvait lire en octobre un article intitulé "Une nouvelle fraise dentaire qui ne fait pas mal". On mentionnait qu'un nouvel appareil ultrasonique fabriqué par la Cavitron Equipment Corporation servait à préparer les cavités et "qu'il était main-

tenant disponible pour les dentistes qui désiraient l'adapter à leur équipement." L'Association dentaire américaine se mit immédiatement en communication avec le président de la compagnie pour apprendre que l'appareil sert actuellement à des fins de recherches et qu'il n'était pas encore sur le marché. Il déclara de plus: "Ce n'est pas notre politique d'offrir en vente nos produits prématurément. Nous regrettons que le *Better Homes and Gardens* ait publié le contraire, quoiqu'il ait obtenu ses renseignements de nous."

Acquisitions récentes de la bibliothèque

- ALVAREZ, W. C.: The neuroses; diagnosis and management of functional disorders and minor psychoses. 1951. 667p.
 BELLAK, L.: Psychology of physical illness. 1952. 243p.
 BERGMAN, G.: The caries inhibiting action of sodium fluoride. 1953. 112p. illus.
 BJORLIN, G.: The influence of local anaesthetics on living tissue in white rat. 1954. 112p. illus.
 BONICA, J. J.: The management of pain. 1953. 1533p. illus.
 BUNTING, R. W.: Oral Hygiene. 2nd ed. 1954. 283p. illus.
 BELL, G. H., Davidson, N. N., and Scarborough, H.: Textbook of physiology and biochemistry. 2nd ed. 1954. 1002p. illus.
 BOURGOYNE, J. R.: Oral Cancer. 1954. 295p. illus.
 BYRD, O. E. Health Yearbook. 1953. 280p.
 COOLIDGE, E. D. Periodontia. 2nd ed. rev. 1954. 384p. illus.
 DAVIS, R. W. Health saboteurs. 1953. 306p. illus.

Nouvelles de l'Université de Montréal

Les visiteurs à la Faculté de chirurgie dentaire depuis le mois de juin

Dr Gestie Perkin, de l'Université de Toronto; Dr D. Kennedy, dentiste de Montréal; Dr Maxwell Hornsnell, F.D.S., L.R.C.P., M.R.S.C., Doyen de "The London Hospital Dental School", Londres, Angleterre; Dr Roy Epstein, de Halifax, N-E.; Dr Georges D. Marks, dentiste de Melbourne, Australie; Dr Edward Zegarelli, professeur à l'Ecole dentaire de l'Université Columbia de New-York; Dr Walter E. Taylor, praticien de Saranac Lake, N.Y.; M. Victor Pinard, d'Ottawa, autrefois de Paris; Dr Louis Houpert, Directeur de l'Institut dentaire de la Faculté de Médecine de Nancy, France; Mme Suzanne Hemmerlé, professeur à l'Ecole dentaire de Paris, France.

— Le docteur Paul Geoffrion, vice-doyen de la Faculté et chef du service d'orthodon-

tie est entré d'un voyage en Europe où il a donné une série de cours et de démonstrations à l'invitation de certaines associations européennes.

En juillet, il a présenté un cours de perfectionnement de cinq jours à l'Ecole dentaire de Paris, où quarante-deux spécialistes venant de toutes les parties de la France étaient présents.

Plus tard en juillet également, il donnait des leçons en orthodontie à l'Université d'Istamboul, Turquie; trente-deux dentistes turques ont assisté à ces cours qui ont duré cinq jours également. Le docteur Geoffrion a de plus représenté l'Université de Montréal à la réunion annuelle de la Société internationale de Morphologie faciale, qui ne compte que vingt-six membres dans le monde entier. Le docteur Geoffrion a été nommé membre honoraire de la Société d'Odontologie de Paris.

Après ces cours, le docteur Geoffrion a visité plusieurs pays, notamment: l'Ecosse, l'Angleterre, la Suisse, la Hollande, l'Autriche, l'Allemagne, la Grèce, etc.

A Bonn, il a été reçu officiellement par le Président de la république.

Dans tous les pays qu'il a visités, le docteur Geoffrion s'est intéressé aux choses dentaires, en visitant les écoles et en se mettant en contact avec les dirigeants de la profession dentaire.

--Le docteur Georges Perreault, diplômé de

Montréal en 1951, vient d'être nommé assistant-professeur de pédiodontie.

Après son doctorat, le docteur Perreault a passé un an à la clinique Guggenheim, de New York; l'année suivante, il s'est rendu à Chicago, à l'Université de l'Illinois, où il a étudié la pédiodontie sous la direction du docteur Maury Massler. A cet endroit, où il y a séjourné deux ans, le docteur Perreault a obtenu sa maîtrise en pédiodontie après avoir fait des recherches et soutenu une thèse.

INDEX AU VOLUME 20 — 1954

	Pages
janvier	51-64
février	107-120
mars	109-182
avril	235-248
mai	295-308
juin	355-368
juillet	401-414
août	455-468
septembre	511-524
octobre	569-584
novembre	637-652
décembre	705-720

ARTICLES ORIGINAUX

"Rapport d'un cas de lupus" par Marcel B. Archambault, B.A., D.D.S., Montréal	51
"L'impôt et les dentistes", par Henri L. Bélanger, C.A., Montréal	107
"Considérations d'intérêt dentaire chez les tuberculeux", par Robert DePlaen, D.D.S., Montréal	115
"Les ostéomes fibreux périapicaux ou cémentomes", par Jean Fontaine, B.A., D.D.S., Montréal	169
"Structure de la fibre de Tomes", par Bertrand Kerbel, Landernau, France	235
"Disfonction temporo-mandibulaire", par Georges Pelletier, D.D.S., Montréal	355
"Propos sur les sinusites d'origine dentaire", par docteur H. Crocquefer, Paris	365
"Pathologie des alvéolites", par Gérard Fortier, D.D.S., Giffard, P. de Qué.	401
"De quelques considérations actuelles sur la salive", par Dr G. Nicolas	410
"Traitement des racines dentaires infectées par l'ionophorèse", par Edward J. Ortion, D.D.S., D.F.M.P., New York	455
"La structure histologique de la dent en relation avec la dentisterie opératoire", par Roland Houle, E.E.C.D., Montréal	511
"Les Rayons-X en stomatologie", par H. Crocquefer et J. H. Marchand	522
"La prévention des variations volumétriques de l'amalgame par une manipulation appropriée", par Jean Maliska, D.D.S., Verdun, Qué.	569, 646
"Coup d'oeil bactériologique dans le canal radiculaire", par V. Fredette, B.Ph.L., D.Sc., F.I.I.C.	637
"Deux dentiers à quatre ans!", par Adélard Leblanc, D.D.S., Lachine	705
"La confection des appareils prothétiques immédiats", par M. A. Pleasure, New York	711

PAGES EDITORIALES

"Plan d'assurance de l'A.D.C.", par Gérard de Montigny	57
"Crise des traitements dentaires", par Gérard de Montigny	113
"L'A.D.C. est prévoyante", par Gérard de Montigny	243
"Encore la fluoruration", par Gérard de Montigny	581
"Une question se pose . . .", par Gérard de Montigny	715

LISTE D'AUTEURS

Archambault, Marcel B. — "Rapport d'un cas de lupus"	51
Bélanger, Henri L. — "L'impôt et les dentistes"	107
Blouin, Eugène — "Les dix commandements du dentiste"	120

Crocquefer, H. — "Propos sur les sinusites d'origine dentaire"	365
Crocquefer, H. — "Les rayons-X en stomatologie", de Montigny, Gérard — "Plan d'assurance de l'A.D.C."	522
de Montigny, Gérard — "Crise des traitements dentaires"	113
de Montigny, Gérard — "L'A.D.C. est prévoyante"	243
de Montigny, Gérard — "Encore la fluoruration"	581
de Montigny, Gérard — "Une question se pose . . ."	715
De Plaen, Robert — "Considérations d'intérêt dentaire chez les tuberculeux"	115
Filion, Gérard — "Le dernier des preux"	301
Fontaine, Jean — "Les ostéomes fibreux périapicaux ou cémentomes"	169
Fortin, Gérard — "Pathologie des alvéolites"	401
Fredette, V. — "Coup d'oeil bactériologique dans le canal radiculaire"	637
Houle, Roland — "La structure histologique de la dent en relation avec la dentisterie opératoire"	511
Huot, Maurice — "Henri Lemieux D.D.S."	64
Kerbel, Bertrand — "Structure de la fibre de Tomes"	235
Leblanc, Adélard — "Deux dentiers à quatre ans!"	705
Maliska, Jean — "La prévention des variations volumétriques de l'amalgame par une manipulation appropriée"	569, 646
Nicolas, G. — "De quelques considérations actuelles sur la salive"	410
Ortion, Edward J. — "Traitement des racines dentaires infectées, par l'ionophorèse"	455
Pelletier, Georges — "Disfonction temporo-mandibulaire"	355
Pleasure, W. A. — "La confection des appareils prothétiques immédiats"	711
Poitras, Paul-Emile — "Le docteur Philippe Hamel"	247

INDEX DES SUJETS TRAITES

Association dentaire canadienne	54, 57, 243
	304, 361, 368
	408, 464, 521, 651, 717
Bureau National d'Examen dentaire du Canada	181-240
Dentisterie opératoire	511-569, 646
Endodontie	61-455, 637
Fluoruration	62-581
Histologie	235
Pathologie	169, 401, 410
Pédiodontie	63, 112, 114
Périodontie	335
Prothèse	51
Psychologie	59
Radiologie	522
Revenu	107
Sinusites	365
Tuberculose	115
Université de Montréal	176, 364, 645

NECROLOGIES

Henri Lemieux	64
Philippe Hamel	247, 301

DIVERS

Les dix commandements du dentiste	120
Art dentaire ou science dentaire	120
Mémoire de la Société de Stomatologie de Québec présenté au Conseil de la Ville de Québec	295
Réchauffons nos solutions anesthésiques	300
Le questionnaire du praticien	468

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